CCD-TR101/TR805
RMT-508

SERVICE MANUAL

US Model
Canadian Model
CCD-TR101
E Model
Tourist Model
CCD-TR805

SONY
ZOOM MIC
SONY
video Hi8
10x Handycam
SONY

Remote commander is available as a unit. But as individual parts the battery case lid of commander is only avaiable.

FL MECHANISM

For MECHANISM ADJUSTMENTS, refer to the "8 mm Video MECHANICAL ADJUSTMENT MANUAL Ⅱ" (9-972-705-11).

SPECIFICATIONS

System

Video recording system	Four Rotary heads, Helical scanning FM system
Audio recording system	Rotary head, FM system
Video signal	NTSC color, EIA standards
Usable cassette	8 mm video format cassette (Hi8 or standard 8 mm)
Tape speed	SP mode: Approx. 1.43 cm (19/32 inches) /sec LP mode: Approx. 0.72 cm (5/16 inches) /sec (playback only)
Recording time	SP mode: 2 hours (E6/P6-120)
Playback time	SP mode: 2 hours (E6/P6-120) LP mode: 4 hours (E6/P6-120)
Fastforward/rewind time	Approx. 8 min. (E6/P6-120)
Image device	CCD (Charge Coupled Device)
Viewfinder	Electronic viewfinder (monochrome)
Lens	Combined 10 × power zoom lens f=6.2 to 62 mm (1/4 to 2 1/2 inches) 45 to 450 mm (1 13/16 to 17 3/4 inches) when converted into a 35-mm still camera F 1.6 to 2.9 Filter diameter 52 mm (2 1/8 inches) TTL autofocus system inner focus wide macro system
Color temperature	Auto, HOLD, ☼ (indoors) 3,200 K, ✷ (outdoors) 5,800 K
Minimum illumination	3 lx (F 1.6)
Illumination range	3 lx to 100,000 lx
Recommended illumination	More than 100 lx

Input and output connectors

S video input/output	4-pin mini DIN Luminance signal: 1 Vp-p, 75 ohms, unbalanced, sync negative Chrominance signal: 0.286 Vp-p, 75 ohms, unbalanced,
Video input/output	Selectable with the video/audio INPUT/OUTPUT selector Phono jack, 1 Vp-p, 75 ohms, unbalanced, sync negative
Audio input/output	Phono jacks, (2: stereo L and R) Input: −7.5 dBs, input impedance more than 47 kilohms Output: −7.5 dBs, (at output impedance 47 kilohms) impedance less than 2.2 kilohms
RFU DC OUT	Special mini-jack, DC 5 V
Headphones jack	Stereo mini-jack (Ø 3.5)
Remote jack	Stereo mini-mini-jack (Ø 2.5)
MIC jack	Stereo mini-jack, −66 dBs low impedance with 2.5 to 3 V DC, output impedance 6.8 kilohms (Ø 3.5)

— Continued on next page —

MICROFILM

8 VIDEO CAMERA RECORDER

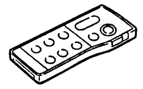
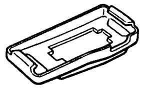
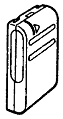
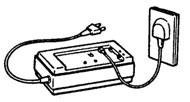
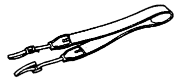
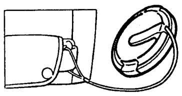
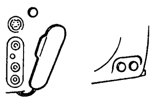
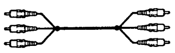
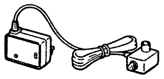
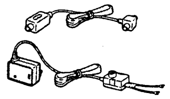
SONY®

General

Power requirements	On battery mounting surface 6.0 V (battery pack) 7.5 V (AC power adaptor)
Power consumption	6.4 W (camera recording) including the viewfinder
Installation	Vertically, Horizontally
Operating temperature	0 °C to 40 °C (32 °F to 104 °F)
Storage temperature	−20 °C to +60 °C (−4 °F to 140 °F)
Dimensions	Approx. 109 × 106 × 189 mm (w/h/d) (4 3/8 × 4 1/4 × 7 1/2 inches)
Weight	Approx. 860 g (1 lb 14 oz) excluding the battery pack, lithium battery, cassette, lens cap, jack cover, and shoulder strap Approx. 1090 g (2 lb 6 oz) including the battery pack NP-55H, lithium battery CR2025, cassette E6-60, lens cap, jack cover, and shoulder strap
Microphone	Electret condenser microphone, stereo type

Design and specifications are subject to change without notice.

Supplied accessories

• Wireless Remote Commander (1) ... Page 20 	• Remote Commander holder (1) ... Page 20 	• Battery pack NP-55H (1) ... Page 6 
• AC power adaptor AC-V30 (1) ... Page 6, 23 	• Lithium Battery CR2025 (2) (for camcorder/for the Remote Commander) ... Page 8 	• Shoulder strap (1) ... Page 20 
• Lens cap (1) (attached to the camcorder) ... Page 14, 16 	• Jack cover (1) (attached to the camcorder) 	• A/V connecting cable (1) ... Page 18 
• S video connecting cable (1) ... Page 18 	• RFU adaptor RFU-90UC (1) ... Page 42  US/Canadian model	• RFU adaptor RFU-89NA with an antenna selector (1)  E, Tourist model

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

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There is the color reproduction standard frame at the back of the book.

SERVICE NOTE

[SEMICONDUCTOR FOR CORRECTION LIST DISPLAY]

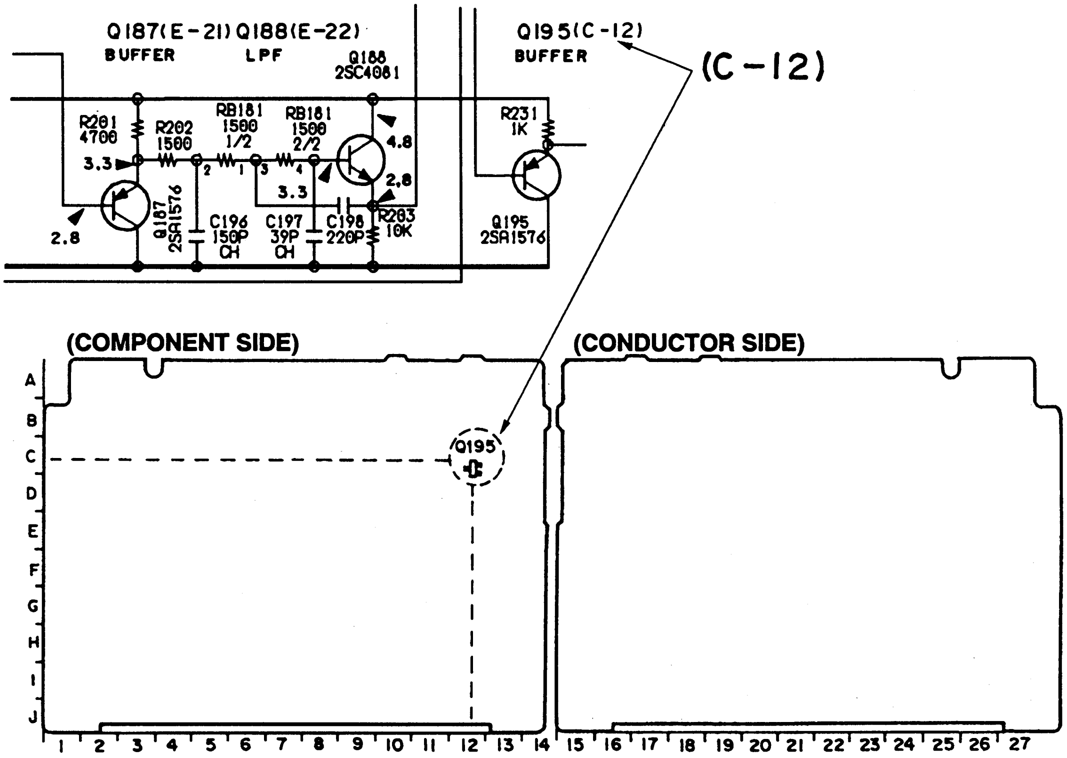
Part code and part name of the semiconductor for correction of the·print board is discribed in the space of each print figure. Use this list when ordering parts.

[PARTS LOCATION DIAGRAM RELATED TO POWER SUPPLY]

The parts location diagram for the power supply which are often checked and replaced when repairing the fuse and IC link and so on. (See pages 99, 112 and 127, 144.)
This diagram is useful for repair.

[SEMICONDUCTOR LOCATION]

In this service manual, the mounted locations of the semiconductors (IC, transistor, diodes) are indicated in red as shown below. This enables to find the location on the board easily when servicing.



Q187(E-21) Q188(E-22)
BUFFER
LPF
Q188
2SC4081
RB181 1500 1/2
RB181 1500 2/2
R201 4700
R202 1500
3.3
2.8
4.8
2.8
3.3
Q187 2SA1576
C196 150P CH
C197 39P CH
C198 220P
R203 10K
Q195(C-12)
BUFFER
R231 1K
Q195 2SA1576
(C-12)
(COMPONENT SIDE)
(CONDUCTOR SIDE)
Q195
A B C D E F G H I J
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27

[HEAD CLEANING]

After an extended period of use the video image may become indistinct or may not appear at all during playback of a tape. The cause of this usually are dirty video heads. For remedy, cleaning of the heads is required.

Check for Head Clogs During Recording

① Use a blank tape, record a short section, then press the stop button to stop.
② Set to recording mode again.
③ If the [⊗] mark is flashing in the viewfinder at this time, head clogs are occurred.

Check During Playback of a Tape

① Play back a pre-recorded tape and display the image on a TV screen.
② If there is no sound and the image is unstable, no image appears on the screen, or tape transport is unstable, head clogs are occurred.

Remedy

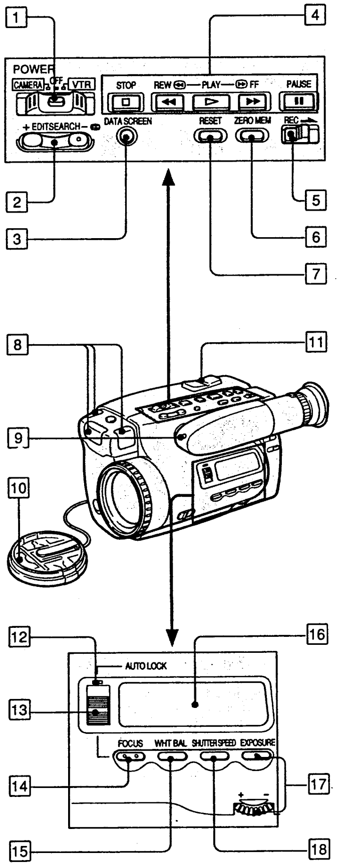
[Cleaning method using a cleaning tape]

- Use the Cleaning Tape. (Please follow the instructions attached to the cleaning tape.)

SECTION 1
GENERAL

This section is extracted from instruction manual.

Identifying the Parts


1
4
POWER
CAMERA
OFF
VTR
STOP
REW
PLAY
FF
PAUSE
+ EDITSEARCH –
DATA SCREEN
RESET
ZERO MEM
REC
2
5
3
6
7
8
11
9
10
12
16
AUTO LOCK
13
FOCUS
WHT BAL
SHUTTER SPEED
EXPOSURE
14
17
15
18

For details on the use of each part, refer to the pages indicated in the parenthesis.

1 POWER switch (14), (19)

2 EDITSEARCH button (26), (48)

3 DATA SCREEN button (43)

4 Tape transport buttons (19), (43)
  ▷ (palyback)
  ▶▶ FF (fast forward)
  ◀◀ REW (rewind)
  □ (stop)
  ❚❚ (pause)

5 ● REC (recording) switch (45)

6 ZERO MEM (zero memory) button (27), (46)

7 RESET button (27), (46)

8 Built-in Microphone (stereo/zoom) (16)

9 Recording/battery lamp (15), (59)

10 Lens cap (14), (16)

11 Power zoom button (16)

12 AUTO LOCK lamp (15), (31)

13 AUTO LOCK switch (15), (31)

14 FOCUS button (32)

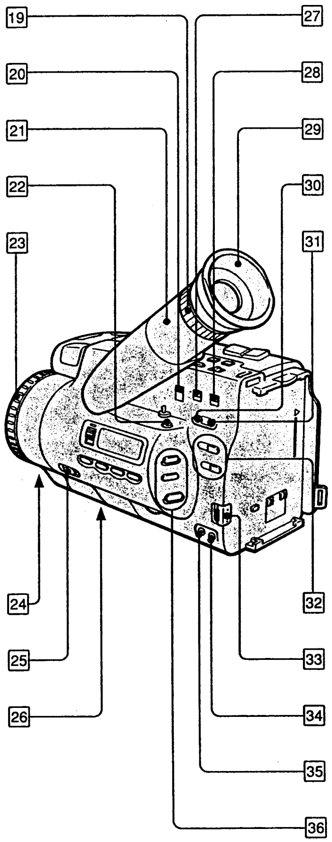
15 WHT BAL (white balance) button (33)

16 Display window (59), (60)

17 EXPOSURE button and dial (35)

18 SHUTTER SPEED button (36)

Identifying the Parts


19
27
20
28
21
29
22
30
23
31
24
32
25
33
26
34
35
36

19 Viewfinder lens adjustment ring (13)

20 HI-FI SOUND switch (44)

21 Viewfinder (13)

22 REC start/stop button (25)

23 Focus ring (32)

24 FADER button (37)

25 STEADY SHOT switch (17)

26 Lithium battery compartment (8)

27 EDIT switch (48)

28 **Hi8** AUTO/OFF switch (50)

29 Eyecup (13)

30 DST button (11), (29)

31 AREA button (29)

32 DATE and TIME buttons (10), (44)

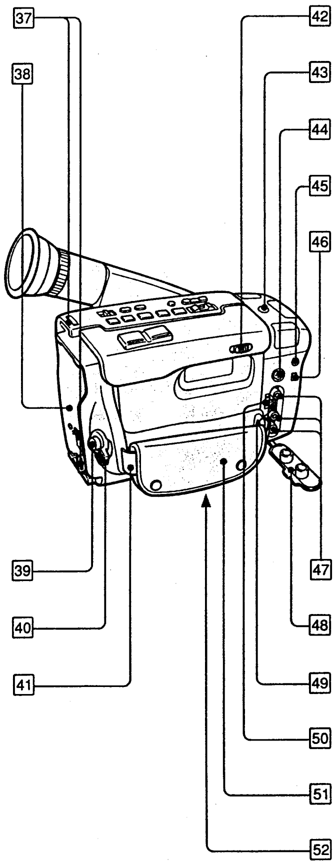
33 BATT (battery eject) knob (7)

34 PHONES (headphones) jack
(stereo mini-jack) (26)

35 Ⓛ REMOTE control jack (mini-mini-jack)

36 SUPERIMPOSE buttons (39)—(41)
MEMORY button
COLOR/MODE button
SUPERIMPOSE ON/OFF button

About Ⓛ (LANC)
Ⓛ stands for Local Application Control Bus System. The Ⓛ control jack is used for controlling the tape transport of video equipment and peripherals connected to it. This jack has the same function as the connectors indicated as CONTROL L or REMOTE.


37
38
39
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41
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43
44
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46
47
48
49
50
51
52

37 Hooks for shoulder strap

38 Battery mounting surface

39 START/STOP button (15)

40 STANDBY switch (15)

41 Grip strap (14)

42 Lid lock (12)

43 Remote Control Sensor (20)

44 S VIDEO jack (18)

45 MIC jack (PLUG IN POWER)
(stero mini-jack) (28)

46 BUILT-IN MIC switch (16)

47 VIDEO/AUDIO jacks (phono jacks) (18)

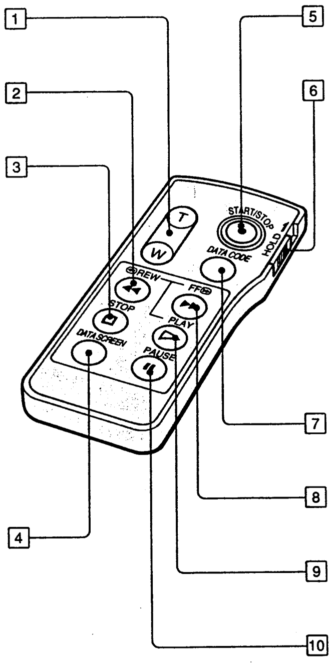
48 Jack cover

49 RFU DC OUT (DC output) jack (28)

50 VIDEO/AUDIO INPUT/OUTPUT selector
switch (18)

51 Grip strap cover (14)

52 Tripod receptacle (53)


1
2
3
4
5
6
7
8
9
10
T
W
START/STOP
DATA CODE
HOLD
REW
FF
STOP
PLAY
DATA SCREEN
PAUSE

1 Power zoom button (16)

2 ◀◀ REW (rewind) button (19), (43)

3 □ STOP button (19)

4 DATA SCREEN button (43)

5 START/STOP button (15)

6 HOLD switch (20)

7 DATA CODE button (44)

8 ▶▶ FF (fast forward) button (19), (43)

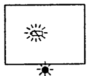
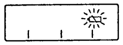
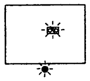
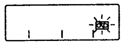
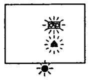
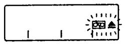
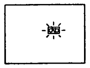
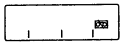
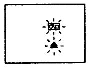
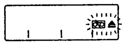
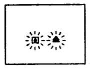
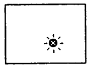
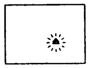
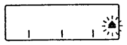
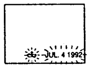
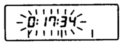
9 ▷ PLAY (playback) button (19)

10 ❚❚ PAUSE button (43)

Indicators inside the Viewfinder and in the Display Window

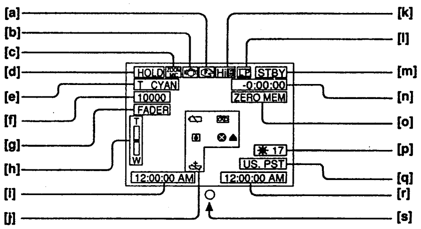
Warning Indicators

If indicators flash inside the viewfinder or in the display window or a caution lamp on the camcorder flashes, check the following:

	viewfinder	display window
Battery Remaining Slow flashing: The battery is weak. Fast flashing: The battery is dead.	 Recording/Battery lamp	
The tape is near the end.		
The tape has run out.		
No tape has been inserted.		
The tab on the tape is out (red).		
Moisture condensation has occurred.		
The video heads may be contaminated.		
Some other trouble has occured. Disconnect the power source and contact your Sony dealer or local authorized facility.		
The lithium battery is weak or the lithium battery is not installed.	 5 minutes	

Inside the Viewfinder

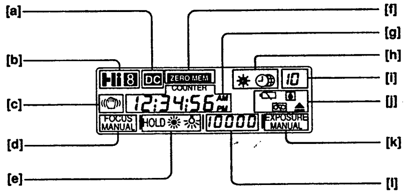
For details on each indicator, refer to the pages idicated in parentheses.



[a] Manual focusing (F) (32)
[b] Lights up while correcting camera-shake. (17)
[c] Lights up while setting BUILT-IN MIC to the ZOOM MIC. (16)
[d] White balance mode (☀, ☼, HOLD) (33)
[e] Title mode and color (40)
[f] Shutter speed (36)
[g] FADER has been pressed (37)
[h] Power zoom indicator (16)
Exposure indicator (35)
[i] Data code (44)
[j] Warning indicators (59)
[k] Lights up while recording in Hi8 system (50)
[l] Lights up when playing back a tape recorded in LP mode. (50)
[m] Tape transport mode (19), (43)
[n] Tape counter (15), (46)
[o] ZERO MEM is pressed. (27), (46)
[p] Area number (10), (30)
[q] Area name (10), (30)
[r] Date or Time (10)
[s] Lights up during recording.
When flashing: "Change battery or cassette." (15), (59)

In the Display Window

For details on each indicator, refer to the pages indicated in parentheses.



[a] Data code (44)
[b] Playing back or recording in Hi8 format (50)
[c] Appears while correcting camera-shake (17)
[d] Manual focusing (32)
[e] White balance mode (33)
[f] ZERO MEM is pressed. (27), (46)
[g] Tape counter, time, date, or tape counter indicator (10), (15), (46)
[h] World clock indicator (10), (30)
[i] Area number (30)
[j] Warning indicators (59)
[k] Adjusting exposure manually (35)
[l] Shutter speed (36)

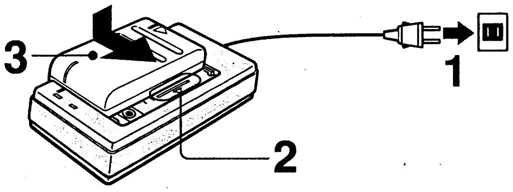
Chapter 1: Getting Started

Charging and Installing the Battery Pack

Before you can use your camcorder, you first need to charge and install the battery pack.

Charging the Battery Pack

To charge the battery pack:



1 Plug the AC power adaptor into a wall outlet.
2 Align the flat side of the battery pack with the line on the AC power adaptor.
3 Push down and slide the battery pack in the direction of the arrow.

When charging is finished, the charge lamp goes out.

Required charging time:

Type of battery pack	NP-55H (supplied)	NP-77H/HD	NP-77	NP-66H	NP-55
Required charging time	70	140	120	110	60

(approx. minutes using AC-V30)

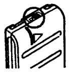
Important!

Use the battery completely before recharging!

Before you recharge the battery, make sure the battery has been used (discharged) completely.

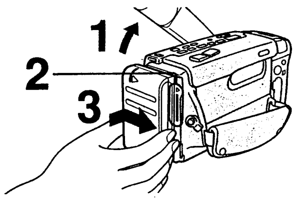
To use up the battery, remove the cassette and slide the POWER switch to CAMERA with the battery attached, and leave the power on until the ▭ indicator and a red lamp flash inside the viewfinder.

The switch on battery pack
This switch is provided so that you can mark the charged battery. Set the switch to the "no mark" position when charging is completed. Set the switch to the "red mark" position when the battery is used up (or in whichever direction you want to remind yourself).



Installing the Battery Pack

When you have finished charging the battery, install the battery pack as follows:



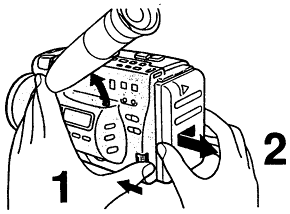
1 Lift up the viewfinder.
2 Align the right side of the battery pack with the white line on the camcorder.
3 Slide the battery pack to the right.

A fully charged battery pack lasts for:

Type of battery pack	NP-55H (supplied)	NP-77H/HD	NP-77	NP-66H	NP-55
Battery life	60	130	110	80	50

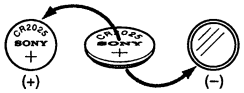
(approx. minutes, continuous recording when used indoors)

Removing the battery pack
Press BATT in the direction of arrow (1), and at the same time, slide out the battery pack to the left (2).



Inserting the Lithium Batteries

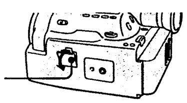
Your camcorder is supplied with two lithium batteries. One is for the camcorder, and the other is for the Remote Commander. Note that the lithium battery has a positive (+) and a negative (–) (minus) slide as illustrated below. **Be sure to install the lithium battery with the positive side facing out.**



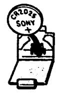
Inserting the Lithium Battery into the Camcorder

To keep a title in the camcorder's memory, as well as to activate the clock and the world clock, you must insert a lithium battery. Make sure you use one of the supplied lithium batteries.

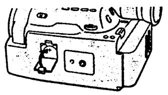
1 Open the lid of the lithium battery compartment located on the bottom of the camcorder.


Lithium battery compartment

2 Install one of the supplied batteries with the positive (+) side facing up.



3 Close the lid.

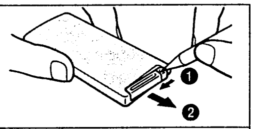


Changing the lithium battery

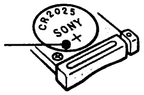
Open the lid of the lithium battery compartment at the bottom of the camcorder, pull out the lithium battery, and insert a new one.

Inserting the Lithium Battery into the Remote Commander

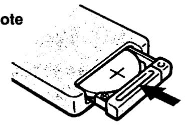
1 Pull out the lithium battery holder from the Remote Commander.



2 Insert the supplied CR2025 lithium battery with the + (plus) side facing up.


+ (plus) side

3 Put the lithium battery holder back into the Remote Commander.

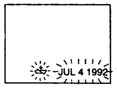


Changing the lithium battery

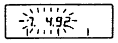
Pull out the lithium battery holder, and pull out the lithium battery, and insert a new one.

Lithium battery life

The battery for the camcorder lasts for about 1 year. When the battery becomes weak or dead, the date or time indicator keeps flashing in the display window and the ⚓ indicator flashes inside the viewfinder for about 5 seconds when you set the POWER switch to CAMERA. The battery for the Remote Commander lasts for about 6 months. When the battery becomes weak or dead, the Commander does not work. In either cases, **replace the battery with a Sony CR2025 or Duracell DL·2025 lithium battery. Use of any other battery may present a risk of fire or explosion.**



Inside the viewfinder



In the display window

While replacing the lithium battery, keep the battery pack or other power source attached. Otherwise, you will need to reset the date, time and title.

WARNING

Battery may explode if mistreated. Do not recharge, disassemble, or dispose of in fire.

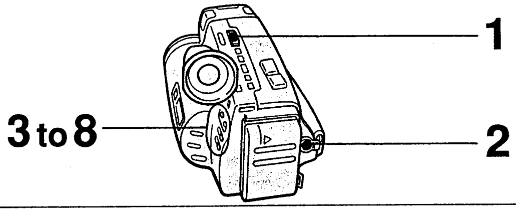
Cautions

- Keep the lithium battery out of the reach of children.
  Should the battery be swallowed, consult a doctor immediately.

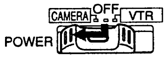
Setting the Date and Time

You need to set the camcorder's date and time to be able to superimpose the date and time onto your video.

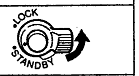
Make sure that the battery is attached and the lithium battery is inserted.
Make sure you are looking at the display window. To check the area name, look into the viewfinder. About the world clock, see page 29.



1 While pressing the small green button on the POWER switch, slide it to CAMERA.

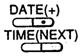

CAMERA
OFF
VTR
POWER

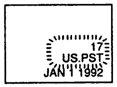
2 Turn the STANDBY switch up.


LOCK
STANDBY

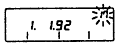
3 Press DATE (+) and TIME (NEXT) simultaneously for at least 2 seconds until the area name and number appear inside the viewfinder and the area number appears in the display window.

DATE now functions as + (to advance numbers) and TIME functions as NEXT (to set).


DATE(+)
TIME(NEXT)


17
US.PST
JAN 1 1992

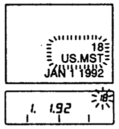
Inside the viewfinder



In the display window

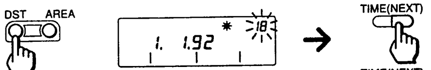
4 Press DATE (+) to select your area name.

The time zones and area names and numbers are as follows:

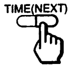

18
US.MST
JAN 1 1992
1. 1.92
18

Time Zones	Area Name	Area Number
Hawaii Standard Time	HAWAII	15
Alaska Standard Time	ANCHRGE	16
Pacific Standard Time/West Canada	US. PST	17
Mountain Standard Time	US. MST	18
Central Standard Time	US. CST	19
Eastern Standard Time/East Canada	US. EST	20

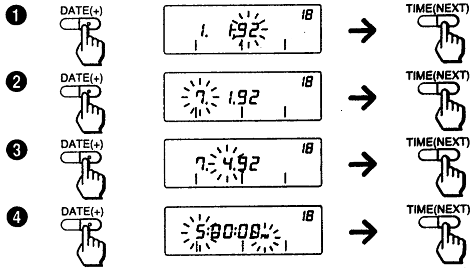
5 Choose one of the following options to set the clock:
(a) For Daylight Savings Time, press DST. Then press TIME (NEXT).
The ☀ indicator appears inside the viewfinder and in the display window.


DST AREA
1. 1.92
18
TIME(NEXT)

(b) For standard time, press TIME (NEXT).

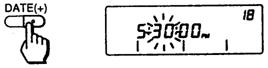


6 Adjust the flashing digits of the year, month, day and hour by pressing DATE (+) and TIME (NEXT).
To set the year to 1992, no need to press DATE(+) in step ❶

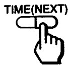

❶
DATE(+)
1. 1.92
18
TIME(NEXT)
❷
DATE(+)
7. 1.92
18
TIME(NEXT)
❸
DATE(+)
7. 4.92
18
TIME(NEXT)
❹
DATE(+)
5:00:00
18
TIME(NEXT)

Note:
- When you keep DATE (+) pressed, the digits advance faster.

7 Adjust the flashing digits of minute by pressing DATE (+).


DATE(+)
5:30:00
18

8 Press TIME (NEXT) to set the second to "00".
The clock starts working.



Correcting the date and time settings
Press TIME (NEXT) repeatedly until the minute digits stop flashing. Then repeat step 3 to 8.

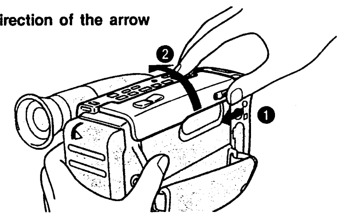
Checking the preset date and time
Press DATE (+) or TIME (NEXT). When you press the same button again, the indicator goes off.

Resetting to standard time
Press DST. The ☀ indicator goes off.

Inserting a Cassette

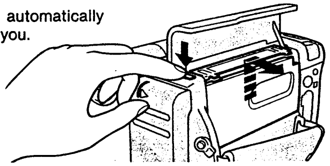
Make sure that the power source is attached before you insert a cassette. About the usable cassettes, see page 50.

1 **While sliding the lid lock in the direction of the arrow ❶, lift up the lid ❷.**

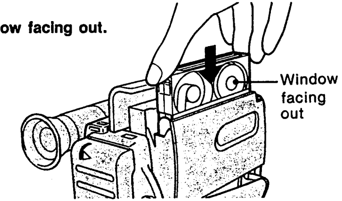


2 **Press EJECT.**

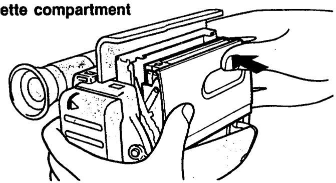
The cassette compartment automatically lifts up and opens toward you.



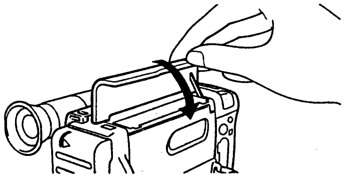
3 **Insert the cassette with the window facing out.**



4 **Press the PUSH mark on the cassette compartment cover to close it.**



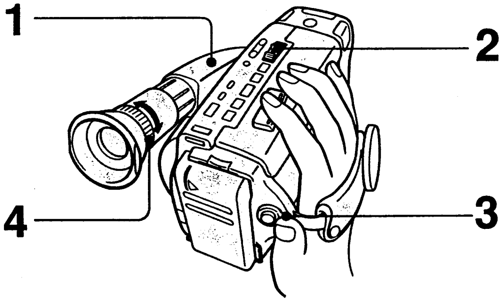
5 **Close the lid.**



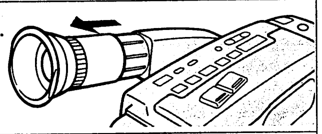
Adjusting the Viewfinder Lens

Before you use the camcorder for the first time (or after someone else has used it), adjust the viewfinder lens to best fit your eyesight. Make sure that the power source is attached to the camcorder, and a cassette is inserted.

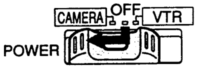
If you wear glasses
You can bend back the eyecup to get a better view of the viewfinder.



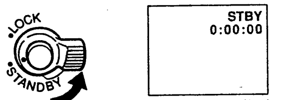
1 **Pull out the viewfinder until it clicks.**



2 **While pressing the small green button on the POWER switch, slide it to CAMERA.**

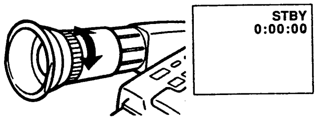


3 **Turn STANDBY up.**



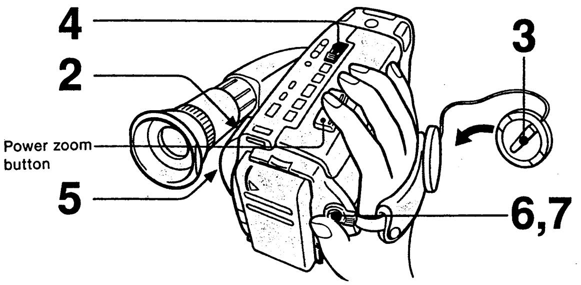
Inside the viewfinder

4 **Turn the viewfinder lens adjustment ring so that the "STBY" indicator inside the viewfinder screen comes into sharp focus.**



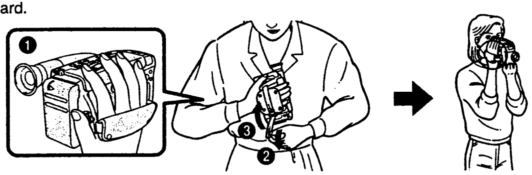
Camera Recording

This section describes the basic procedures for recording.
Make sure that the viewfinder is pulled out and a battery pack (see page 7) or any other power sources (see page 23) are attached. Before you record one-time events, you may want to make a trial recording to make sure that the camcorder is working perfectly.



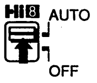
1 **Hold the camcorder as described below.**

Check that your thumb can easily touch START/STOP. Put your hand through the grip strap, hold your camcorder against your body and pull the strap upward.

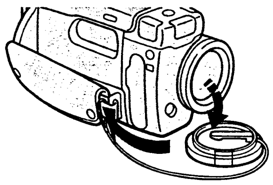


2 **Slide Hi8 AUTO/OFF to AUTO.**

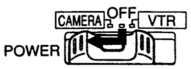
For details, see page 50.



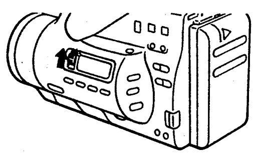
3 **Remove the lens cap with squeezing its tabs and clip it on the grip strap cover.**



4 **While pressing the small green button on the POWER switch, slide the POWER switch to CAMERA.**

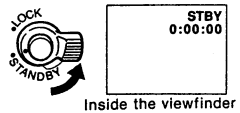


5 **Slide the AUTO LOCK switch up to turn on the AUTO LOCK lamp.**
This switches all the camera functions automatic (i.e. autofocus, auto exposure, auto white balance) and sets the shutter speed to normal (1/60 second).



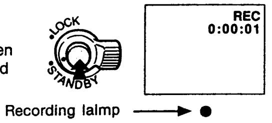
6 **Turn STANDBY up.**

"STBY" indicator and tape counter appear inside the viewfinder. Now you can see through the viewfinder.



7 **Press START/STOP once.**

The camcorder is recording when the "REC" indicator appears and the Recording lamp lights up inside the viewfinder.



Inside the viewfinder, you can see a black and white picture of what you are recording, and information that indicates what the camcorder is doing.

Stopping recording momentarily
Press START/STOP again.
"STBY" appears inside the viewfinder.

Finishing recording
Turn STANDBY down and slide the POWER switch to OFF.

Ejecting the tape
Make sure that the power source is attached.
1 While sliding the lid lock to the left, lift the lid up.
2 Press EJECT.
3 Take out the cassette and press the area marked PUSH on the cassette compartment cover to close it.
4 Close the lid.

When you shoot a subject within 1 m (3.3ft) of the lens
If you cannot get a sharp focus while in extreme telephoto zoom, press the W side of the power zoom button until the focus is sharp.

Near the end of the tape
The ⌧ indicator, the red lamp inside the viewfinder, and the camera recording/battery lamp on the camcorder flash slowly. When the tape reaches the end, the flashing becomes rapid.

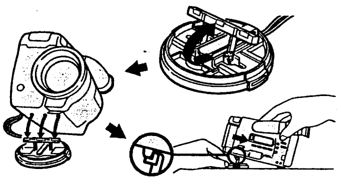
Note on recording
When you record from the beginning of the tape, run the tape for about 15 seconds before the actual recording. This will ensure that you will not miss any start-up scenes when the tape is played back.

If you leave the camcorder in the standby mode for 5 minutes or more

The camcorder goes off automatically. To re-enter standby mode, turn STANDBY down once and turn it up again. To start recording, press START/STOP.

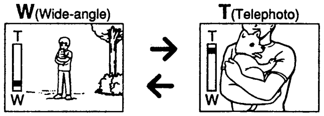
Note on lens cap

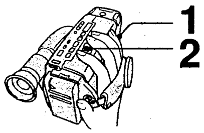
You can use the supplied lens cap as a handy camcorder stand.



Zooming

Zooming is a recording technique that lets you change the size of the subject in the scene. Use "zoom-in (telephoto)" for dramatic close-ups, and "zoom-out (wide-angel)" for panoramic long shots. You can also use zooming to focus manually or to decide on a shooting angle. When you zoom in or zoom out, you can also set the sound to "zoom" along with the picture. For more professional-looking recordings, use zooming sparingly.

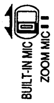




1 **Select the BUILT-IN MIC switch position.**

a) When you want to record the usual Hi-Fi stereo sound regardless of zooming, set the BUILT-IN MIC switch to the green mark position.

b) When you want the sound to "zoom" with the picture, set the BUILT-IN MIC switch to ZOOM MIC. ZOOM MIC indicator appears inside the viewfinder.

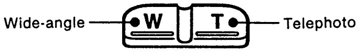


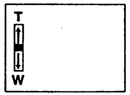
Note: When you set the BUILT-IN MIC switch to ZOOM MIC, the sound is recorded in monaural at the telephoto position.

2 **Press the T side or the W side of POWER ZOOM button.**

T side: for telephoto (subject appears closer)
W side: for wide-angle (subject appears farther away)

The camcorder's POWER ZOOM button offers two-levels of speed zooming. Press it firmly for high-speed zooming and softly for relatively slow zooming.





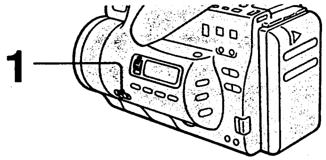
Inside the viewfinder

Notes

- When you zoom out with the tele-conversion lens (not supplied), the frame of the lens may appear on both sides of the picture. For details, consult your Sony dealer.
- You can shoot a subject that are at least 80 cm (about 31 1/2 inches) away from the lens surface in the telephoto position.

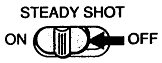
Getting a Steady Picture

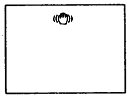
You can use the Steady Shot function to correct recordings caused by accidental camera-shake. Use Steady Shot:
— When you zoom in
— When you shoot scenery from a car window
— When you shoot scenes while moving

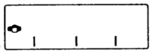


1 **Set the STEADY SHOT switch to ON.**

The ((✋)) indicator appears inside the viewfinder and in the display window.







In the display window

To release Steady Shot function

Set the STEADY SHOT switch to OFF.

Notes on using Steady Shot

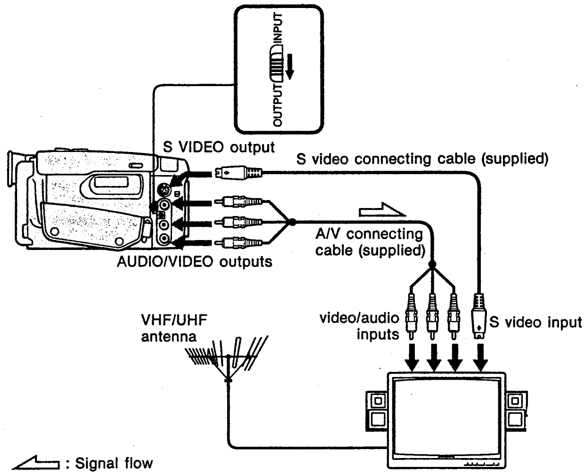
- To conserve the battery, set the STEADY SHOT switch to OFF when you don't need it. When it is set to ON, battery power is used up more equickly.
- Steady Shot will not correct excessive camera movement.
- When you shoot stationary objects with a tripod, set the STEADY SHOT switch to OFF.

Playing Back a Tape

You can use this camcorder to function as a VCR by connecting it directly to your TV for playback.

There are several ways to connect the camcorder to your TV. First check if your TV has video/audio inputs. If it does not, see page 42. You can also monitor the playback picture inside the viewfinder at the same time.

Connecting a TV with Video/Audio Inputs


OUTPUT
INPUT
S VIDEO output
S video connecting cable (supplied)
A/V connecting cable (supplied)
AUDIO/VIDEO outputs
VHF/UHF antenna
video/audio inputs
S video input
: Signal flow

1 Connect the camcorder and the TV using the supplied A/V connecting cable.

- If your TV has an S video input jack, connect it to the S VIDEO jack on the camcorder using the S video connecting cable (supplied). In this case, you do not need to connect the yellow (video) plug of the A/V connecting cable.
- If your TV is a monaural type, connect only the white plug for audio both on the camcorder and the TV. Do not use the red plug. In this case, the sound will be in monaural.

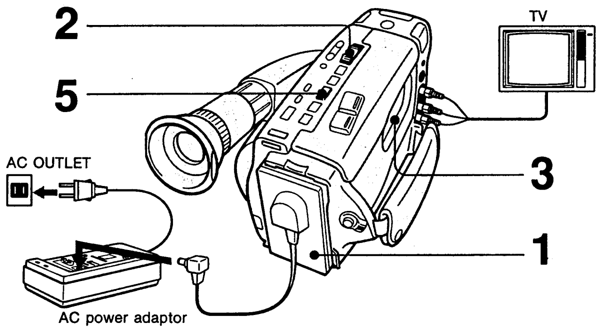
2 Set the INPUT/OUTPUT selector on the camcorder to OUTPUT.
3 Set the TV/VCR selector on the TV to VCR.

About the AUDIO/VIDEO jacks

The AUDIO/VIDEO jacks on this camcorder work as both input and output jacks. Set the INPUT/OUTPUT selector as follows.

in the OUTPUT position	to view the playback tape/to edit on another VCR
in the INPUT position	to record from another VCR or a TV

Playing Back a Tape


2
5
TV
AC OUTLET
3
1
AC power adaptor

1 Attach the connecting plate of the AC power adaptor to the camcorder and connect the AC power adaptor to a wall outlet.
Make sure that the INPUT/OUTPUT selector on the camcorder is set to OUTPUT.

2 While pressing the small green button on the POWER switch, slide it to VTR.

CAMERA
OFF
VTR
POWER

3 Insert a tape.

4 Set the TV/VCR selector on the TV to VCR.
If you are connecting with an RFU adaptor, turn on the TV and select the channel that you selected for the RFU adaptor(3 CH or 4 CH).

5 Press ▷ (PLAY).
Playback starts.

To stop playback, press □(STOP).
To rewind the tape, press ◀◀ (REW).
To advance the tape rapidly, press ▶▶ (FF).

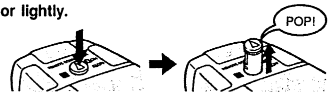
When you have finished playback

1 Slide the POWER switch to OFF.
2 Disconnect the AC power adaptor from the wall outlet.

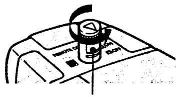
Using the Remote Commander

You can use the Remote Commander to record yourself with your friends or family, or conveniently control the playback of your tape from a distance.
Before you use the Remote Commander, insert a supplied lithium battery into it (see page 9) and turn on the POWER switch on the camcorder.

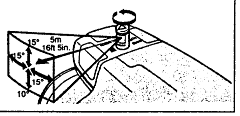
1 **Push the head of the remote sensor lightly.**
The remote sensor pops up.



2 **Aim the remote sensor in the direction you want to control the camcorder.**



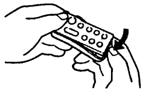
3 **Aim the Remote Commander at the remote sensor and press the appropriate button on the Remote Commander.**
Maximum distance and angle for remote control



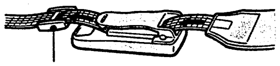
To prevent misoperation
When you slide the HOLD switch in the direction of the arrow, none of the buttons on the Remote Commander will work. Use this to prevent any misoperation, such as accidentally pressing a button.

Using the Remote cmmander holder
You can clip the Remote Commander holder on your coat pocket or belt, or slide it onto the shoulder belt before attaching the Remote Commander to it.

To remove the Remote Commander from the holder



To attach the holder to the shoulder belt



Remove this part before sliding the holder onto the belt.

Note

- If the Remote sensor is in sunlight or strong light, you may not be able to operate with the Remote Commander.
- This camcorder works through the signals of commander mode VTR2. A commander mode is used to distinguish this camcorder from other Sony VCR to avoid misoperation. If you use another Sony VCR at commander mode VTR 2, we recommend you change the commander mode or cover the remote sensor of the VCR with black paper.
- Be sure that there are no obstructions between the Remote Commander and the camcorder.

Getting the Most out of Your Battery Pack

This section shows you how you can get the most out of your battery pack.

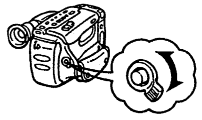
Preparing the battery pack

Always carry additional batteries.
Have sufficient battery pack power to do 2 to 3 times as much recording as you have planned.
"Battery life" indicated in this manual is measured by the continuous recording time of the camcorder, placed at a room temparature using a fully charged battery.

Battery life is shorter in cold environments
Battery efficiency is decreased and the battery will be used up more quickly if you are recording in cold environments.

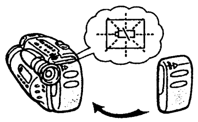
Saving battery power
Turn STANDBY on the camcorder down when not recording to save battery power. A smooth transition between scenes can be made even if recording is stopped and started again.

While positioning the subject, selecting an angle, or looking through the viewfinder lens, the lens moves automatically inside the camcorder and the battery is used. The battery will be also used when a tape is inserted or removed.



When to Replace the Battery Pack

When the ⌧ indicator inside the viewfinder changes from slow flashing to rapid flashing while you are recording, slide the POWER switch to OFF and replace the battery pack. Leave the tape in the camcorder to obtain smooth transition scenes after the battery pack is replaced.



Notes on Charging

A brand-new battery
A brand-new battery pack is not charged. Before using the battery pack, charge it sufficiently.

A used battery pack
- Make sure to use up the battery before recharging.
- If recording is completed before the battery indicator appears inside the viewfinder, you should remove the tape, slide the POWER switch to CAMERA, turn up STANDBY, and leave the camcorder until the battery indicator flashes rapidly.
- When you use the AC-S10 power adaptor, the DC-S10 car battery charger, or BC-S10 portable battery charger, you can use the discharging function.
- **Charging the still usable battery causes a lowering of battery capacity. Battery capacity can be recovered if fully discharge and charge the battery again.**

Getting the Most out of Your Battery Pack

After long storage

Recharge the battery pack after a long period of storage.
If the battery pack is charged fully but not used for a long time (about 1 year), it becomes discharged.

Charge it again, but in this case the battery life will be shorter than normal. After several charging and discharging cycles, the battery life will recover its original capacity.

Note on the Terminals

If the terminals (metal parts on the back) are not clean, the battery duration will be shortened.

When the terminals are not clean or when the battery pack has not been used for a long time, install and remove the battery pack from time to time. This improves the contact condition. Also, wipe the + and – terminals with a soft cloth or paper.

Note on the Rechargeable Battery Pack

Battery heat up is normal

During charging or recording, the battery pack heats up. This is caused by energy that has been generated and a chemical change that has occurred inside the battery pack. This is not cause for concern.

Battery Care

- Remove the battery pack from the camcorder after usingit, and keep it in a cool place. When the battery pack is attached to the camcorder, a small amount of current flows to the camcorder ever if the POWER switch is set to OFF. It causes overdischarging and shortens battery life.
- The battery pack is always discharging even when it is not in use after charging. Therefore you should charge the battery right before using the camcorder.

The life of the battery pack

The battery pack can be fully charged and discharged about 500 times under normal temperatures. ,If the battery ▭ indicator flashes rapidly just after turning on the camcorder with a fully charged battery pack, the battery pack should be replaced with a new fully charged one.

Charging temperature

You should charge batteries at temperatures from 10 °C to 30 °C (from 50 °F to 85 °F). Lower temperatures require a longer charging time.

Chapter 3: Advanced Operation

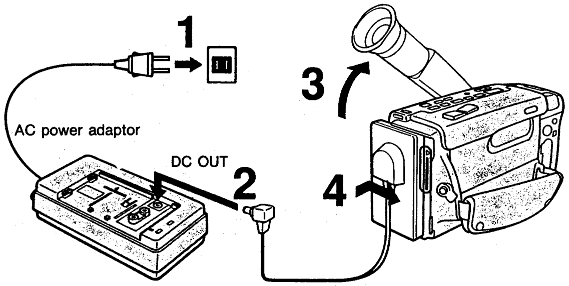
Alternative Power Sources

This section describes alternative power sources you can use for your camcorder: battery pack (see page 7), house current (on this page), and 12/24 V car battery (see page 24). Choose the appropriate power source depending on where you want to use your camcorder.

Place	Power source	Accessory to be used
Outdoors	Battery pack	Battery pack NP-55H (supplied), NP-77HD, NP-77H, NP-77, NP-66H, NP-55
Indoors	House current	AC power adaptor AC-V30 (supplied), AC-S10
In the car	12 V or 24 V car battery	DC pack DCP-77

Using House Current

To use the supplied AC-V30 AC power adaptor:



1 Connect the AC power adaptor to a wall outlet.
2 Insert the connecting cord supplied with the AC-V30 AC power adaptor into the DC OUT jack on the AC power adaptor.
3 Lift up the viewfinder.
4 Align the right side of the connecting plate with the white line on the camcorder, and slide it to the right.

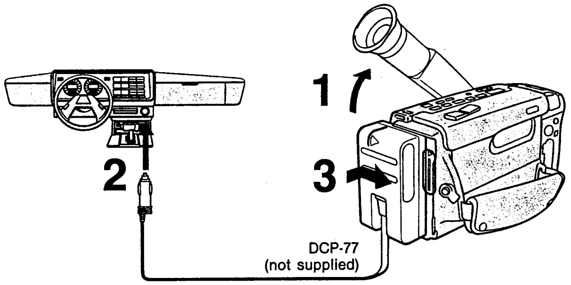
Removing the connecting plate

The connecting plate is removed the same way as the battery pack. See page 7.

Alternative Power Sources

Using a Car Battery

To use the DCP-77 DC pack (not supplied):



1 Lift up the viewfinder.
2 Connect the cord of the DC pack to the cigarette lighter socket of the car (12 V or 24).
3 Align the right side of the DC pack with the white line on the camcorder, and slide it to the right.

Removing the DC pack

The connecting plate is removed the same way as the battery pack. See page 7.

Options for Charging

- AC-S10 AC power adaptor:
  You can charge a battery pack whether it is used up or not with this aqdaptor because it has discharging function.
- BC-55 or BC-77 portable battery charger (Ideal for travel):
  You can charge a battery pack on 100-240 V AC current.
- DC-S10 car battery charger: with discharge function. You can charge a battery pack through the cigarette lighter socket of a car.

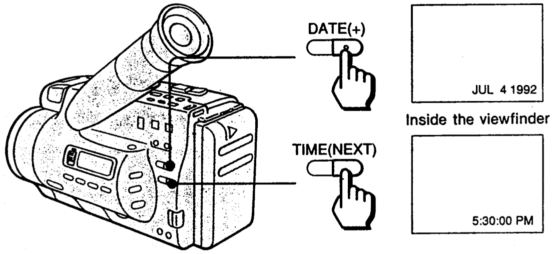
Camera Recording

In "Chapter 2: Basic Operation", you learned the basic recording operations. This section shows you how to record the date or time, re-record a picture, prevent accidental erasure, and more.

Recording the Date or Time

You can superimporse the date or time on your recording.

While you are recording or when the camcorder is in recording standby, press DATE for the date indicator or TIME for the time indicator. The date or time displayed inside the viewfinder is recorded with the picture.

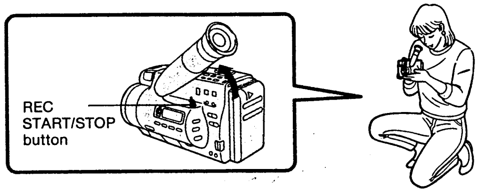


To stop recording with the date and time

Press DATE or TIME again. The date or time indicator disappears. The picture recording continues.

Recording in a Low-position

You can also record in a low position to get an interesting recording angle. When the viewfinder is pushed down, you can monitor the picture without being close to the viewfinder.



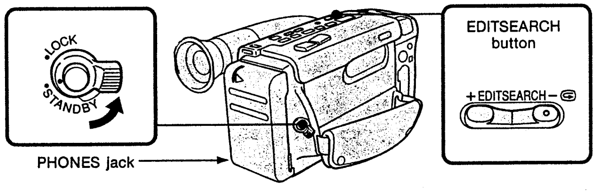
1 Adjust the viewfinder barrel. (You can turn it up to 90 degrees.)
2 Turn STANDBY up.
3 Press REC START/STOP.

To stop recording

Press REC START/STOP.

Checking the Recorded Picture Inside the Viewfinder (EDITSEARCH)

Using EDITSEARCH, you can review the last recorded scene or check the recorded picture inside the viewfinder.
After checking your recorded picture, you can also re-record over a previously recorded portion.



Reviewing the last recorded scene—Rec Review

You can check the last portion of a scene you just recorded in CAMERA mode. This is convenient for quick, on-the-spot checks.

1 Set the camcorder in standby mode by turning STANDBY up.
2 Press the – (⊜) side of EDITSEARCH momentarily.

The last few seconds of the recorded portion are played back inside the viewfinder. Then, the camcorder goes back to standby mode, ready for the next recording.

Checking your record picture

You can check the recorded picture inside the viewfinder. After checking, you can also re-record over a previously recorded portion.

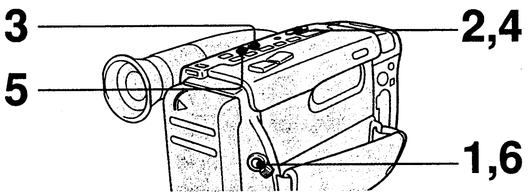
1 Set the camcorder in standby mode by turning STANDBY up.
2 Keep pressing the +side or – side of EDITSEARCH to play back the picture while looking inside the viewfinder.
  + side: to view the forward playback picture
  – side: to view the reverse playback picture
  To stop playback, release EDITSEARCH.
3 To re-record over a recorded portion:
  1 Press the + side or – side of EDITSEARCH to locate the point you want to begin the re-recording.
  2 Press START/STOP to begin re-recording.
  Re-recording begins from the point you released EDITSEARCH. As long as you do not eject the tape, the transition between the scenes will be smooth.

Monitoring the sound while viewing the playback picture inside the viewfinder by using headphones (not supplied)

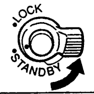
1 Connect headphones (not supplied) to the PHONES jack.
2 While pressing the small green button on the POWER switch, slide it to VTR.
3 Press ◀◀ to rewind the tape and press □ where you want to stop.
4 Press ▷ to start playback.

Inserting a Scene in the Middle of a Recorded Tape (Insert Recording)

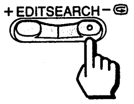
You can insert a scene in the middle of a recorded tape by setting the starting and ending point. The previously recorded portion will be erased.



1 Set the camcorder in standby mode by turning STANDBY up.

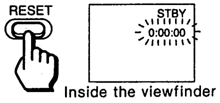


2 While looking inside the viewfinder, keep pressing the + (forward playback) or –(reverse playback) side of EDITSEARCH, and release the buttun where you want to end the insertion.
The camcorder enters standby mode again.

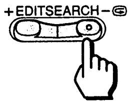


3 Press RESET.

The counter resets to zero.
This works as an end point mark.

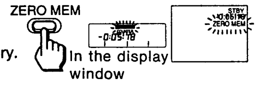


4 While looking inside the viewfinder, keep pressing the – side of EDITSEARCH and release the button at the point where you want to start the insertion.



5 Press ZERO MEM.

The insert ending point is stored in memory.



6 Press START/STOP.
Insert recording begins. The insert recording stops automatically at the counter zero point.

Canceling ZERO MEM

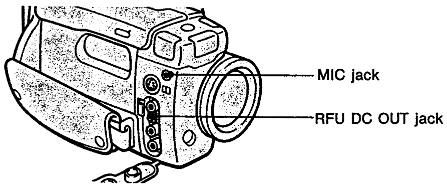
Press ZERO MEM.

Note

The picture may be slightly distorted at the ending point when played back.

Recording with an External Microphone

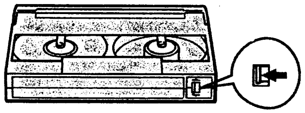
You can connect an optional external microphone (stereo or monaural) to the MIC jack. This jack also accepts a "plug-in-power" microphone. If the microphone has two plugs, connect the DC IN plug to the RFU DC OUT jack of the camcorder. If you want to attach the microphone to the camcorder, you also need an optional shoe attachment.


MIC jack
RFU DC OUT jack

Preventing Accidental Erasure

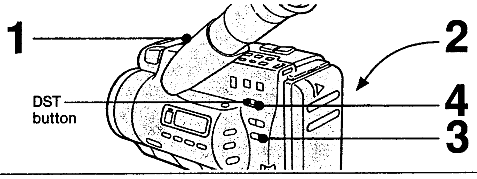
To prevent accidental erasure, slide the tab on the cassette to expose the red mark.

If you try to record with the red mark exposed, the ▭ and ⏏ indicator flash inside the viewfinder and in the display window, and you cannot record. To re-record on this tape, slide the tab back out covering the red mark.

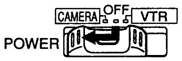


Using the World Clock

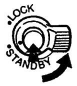
You can reset the clock according to the time zone of the location you're using the camcorder by pressing the AREA button.
Before using the world clock, set the date and time settings (see page 10).


1
2
DST button
4
3

1 **While pressing the small green button on the POWER switch, slide it to CAMERA.**

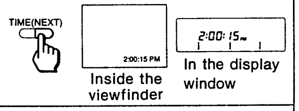

CAMERA
OFF
VTR
POWER

2 **Turn STANDBY up.**


LOCK
STANDBY

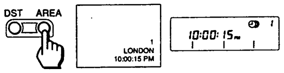
3 **Press TIME.**

The date or time settings appear.


TIME(NEXT)
2:00:15 PM
Inside the viewfinder
2:00:15
In the display window

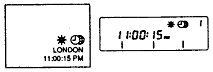
4 **Press AREA until the name and number of the time zone of the location you're using the camcorder appear.**

The ⊕ indicator appears in the display window. You can find the area name and number in the "Time zone chart" on the next page.


DST
AREA
1
LONDON
10:00:15 PM
10:00:15
1

Checking the date
Press DATE (+). To turn off the date indicator, press DATE (+) again.

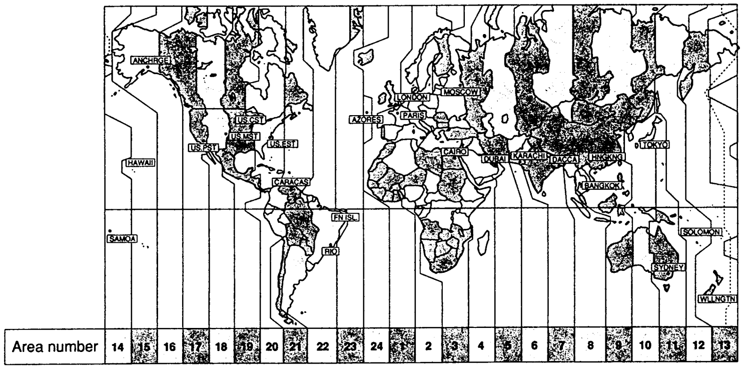
Adjusting to daylight savings time
Press DST. The time changes to daylight savings time.
To reset to Standard time, press DST again.


LONDON
11:00:15 PM
11:00:15
1

Re-setting to your home area time again
Press AREA until your home area name appears.

Using the World Clock

Time zone chart

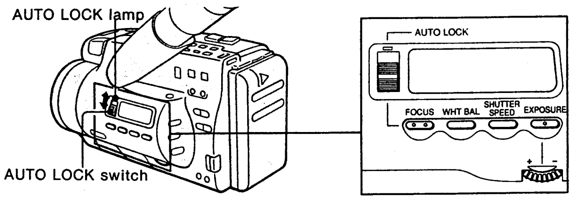


Area number	Area name	Nations or area*
1	LONDON	England, GMT (Greenwich Mean Time), Portugal
2	PARIS	Austria, France, Germany, Italy, Netherlands, Spain, Sweden, Switzerland
3	CAIRO	Egypt, Greece, Turkey
4	MOSCOW	Iraq, Kenya, Saudi Arabia, former U.S.S.R. (west)
5	DUBAI	United Arab Emirates
6	KARACHI	Moldives, Pakistan
7	DACCA	Bangladesh, India, Myanmar
8	BANGKOK	Cambodia, Indonesia (Jakarta), Thailand, Vietnam
9	HNGKNG	Australia (west), China, Hong Kong, Indonesia (Bali, Borneo), Malaysia, Philippines, Singapore, Taiwan
10	TOKYO	Japan, Korea
11	SYDNEY	Australia (east), Guam, Saipan
12	SOLOMON	New Caledonia
13	WLLNGTN	Fiji, New Zealand
14	SAMOA	Western Samoa
15	HAWAII	HST (Hawaii standard time), Tahiti
16	ANCHRGE	AST (Alaska standard time)
17	US. PST	PST (Pacific standard time)
18	US. MST	MST (Mountain standard time)
19	US. CST	CST (Central standard time), Mexico
20	US. EST	EST (East standard time), Peru
21	CARACAS	Chile, Venezuela
22	RIO	Argentina, Brazil
23	FN ISL.	Fernando de Noronha
24	AZORES	Azores Islands

* These are common names. They may be different from formal country names.

Selecting Automatic/Manual Adjustment Mode

This section shows you how to record by using manual adjustment functions. The camcorder's automatic functions offer you worry-free operation under most shooting conditions. But in some circumstances, manual adjustment is better for creative recording. You can manually adjust the focus, white balance, exposure and/or shutter speed with this camcorder:



Automatic adjustment

Slide the AUTO LOCK switch up to turn on the AUTO LOCK (green) lamp.

The camcorder adjusts the focus, white balance, and exposure automatically. It also sets the shutter speed to 1/60.

Manual adjustment

Slide the AUTO LOCK switch down to turn off the AUTO LOCK lamp.

You can adjust the focus, white balance, exposure, and speed shutter manually. Even if you slide the AUTO LOCK switch down, only the settings you made during manual adjustment have been changed. The other settings remain the same as those in automatic adjustment.

About the previous settings

The settings you made with manual adjustment are retained in the following case:

— When you slide the AUTO LOCK switch up after you have made manual adjustment and then slide it down again.

— When you set the POWER switch to OFF

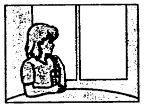
But, they are canceled if it passes more than 5 minutes after you have detached the battery.

Focusing Manually

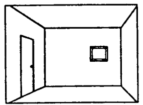
When to use manual focus

In the following cases you should obtain better results by adjusting the focus manually.

[a]

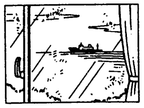


[b]



[c]

[d]

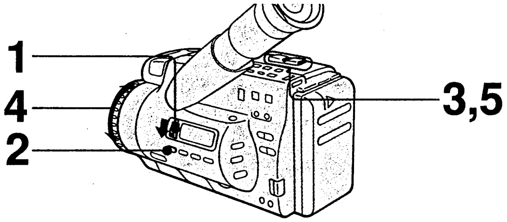


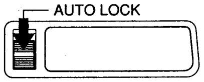
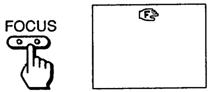
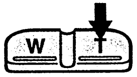
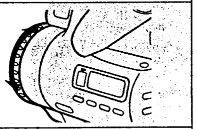
- **[a]** Too much brightness behind the subject
- **[b]** Subjects with little contrast – – – walls, sky, etc.
- **[c]** Horizontal stripes
- **[d]** Subjects through frosted glass
- Insufficient light
- One subject is close; the other is in the center, but at a distance
- Subjects beyond nets, etc., or another subject passes in front of the camcorder
- Bright subject or subject reflecting light
- High contrast behind the subject (the background may be focused)
- When shooting a stationary subject using tripod
- When you want to save battery power

Focusing Manually

Focusing Manually

When adjusting the focus manually, the best way is to first adjust at telephoto position before recording, then set the desired zoom angle.



1 **Slide the AUTO LOCK switch down to turn off the AUTO LOCK lamp.**	
2 **Press FOCUS.** The Ⓕ indicator appears inside the viewfinder. This indicates that you are in manual focus mode.	 Inside the viewfinder
3 **Keep pressing the T (telephoto) side of the power zoom button until the zooming stops.**	
4 **Turn the focus ring to achieve sharp focus.** **Note** The focus ring does not have a stop position.	
5 **Set the desired shot length using the power zoom button.**	

To reactivate autofocusing

Press FOCUS until the Ⓕ indicator inside the viewfinder disappears.

Shooting in relatively dark places

When shooting in relatively dark places such as indoors, the depth of field (distance range of the subject that will be in sharp focus) is very shallow. For best results, shoot at wide angle after focusing in the telephoto position.

Adjusting the White Balance

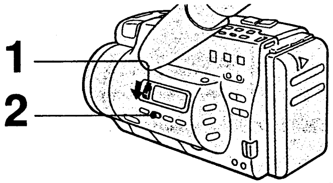
What is white balance

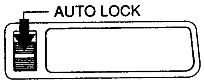
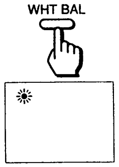
White balance is the adjustment to make white subjects look white and to obtain a more natural color balance for camera recording.

In the following cases, you should obtain better results by adjusting the white balance manually.

Conditions	White balance mode (indicator inside the viewfinder)
Lighting conditions change quickly	💡 (in door)
Conditions too bright, such as in photography studios	
Under sodium lamps	
Under mercury lamps	
Monochromatic subject or background	HOLD
Under a color matching fluorescent lamp	☀ (out door)
Recording: • a sunset/sunrise • just after sunset • just before sunrise e.g. neon signs, fireworks	

Adjusting the White Balance



1 **Slide the AUTO LOCK switch down to turn off the AUTO LOCK lamp.**	
2 **Select the desired white balance mode by pressing WHT BAL.** Each time you press the button, the indicator inside the viewfinder changes as follows: No indicator (auto) → HOLD → ☀ (outdoor) → 💡 (indoor)	 Inside the viewfinder

Note

When you adjust the white balance manually, make sure you re-adjust white balance when moving from indoors to outdoors, or vice-versa.

Adjusting the White Balance

Locking the White Balance Setting (HOLD Mode)

HOLD mode allows you to lock in to certain white balance level.

What is HOLD mode?

When you set the white balance at HOLD mode, the last automatic white balance setting you made wili be locked and maintained even if lighting conditions change. You should obtain better results by using the HOLD position when you shoot monochromatic subjects or backgrounds.

To enter HOLD mode

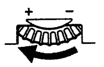
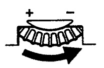
1 Slide the AUTO LOCK switch up to turn on the AUTO LOCK lamp.
The camcorder adjusts the white balance automatically.
2 Point the camcorder at a white, flat object such as a white wall or paper for about 15 seconds.
3 Slide the AUTO LOCK switch down to turn off the AUTO LOCK lamp.
4 Press WHT BAL to display the HOLD indicator inside the viewfinder.

When you detach the battery or change the white balance setting, the locked white balance setting is no longer maintained. In this case, re-enter HOLD mode by following the procedures above again.

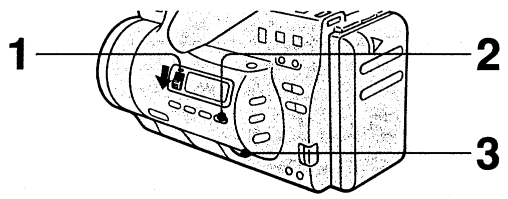
Adjusting the Exposure

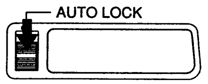
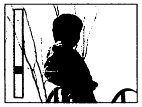
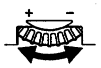
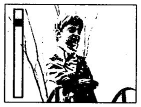
When you adjust the exposure

In the following cases you should obtain better results by adjusting the exposure manually.

Conditions	Turn the EXPOSURE dial:
The background is too bright (backlighting)	upward 
Insufficient light: most of the picture is dark.	
Bright subject and dark background	downward 
To record the darkness faithfully	

Adjusting the Exposure



1 Slide the AUTO LOCK switch down to turn off the AUTO LOCK lamp.	
2 Press EXPOSURE. The exposure is locked at the actual brightness. The exposure indicator appears inside the viewfinder and EXPOSURE MANUAL indicator appears in the display window.	  Inside the viewfinder
3 Adjust the exposure by turning the EXPOSURE dial upward or downward. The exposure is locked at the adjusted brightness.	 

To re-enter the automatic exposure mode

Press EXPOSURE so that the exposure indicator inside the viewfinder disappears.

Using the High-speed Shutter

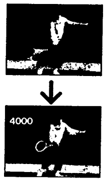
When you record a fast-moving subject, choose a higher shutter speed. The movement will look sharper during freeze frame when the tape is played back with an 8mm recorder that has the clean still function. Remember that you need enough lighting to use the high-speed shutter.

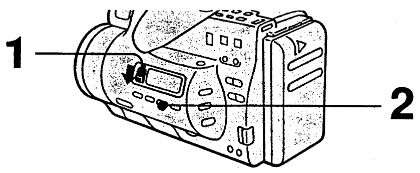
To choose the best shutter speed

Example use	For your selection
• On clear days, recording golf or tennis swing (To view the hit ball clearly in the still picture mode, set to 1/10000 or 1/4000) • Recording skiers	1/10000 or 1/4000 or 1/2000
• On overcast days, recording a moving carousel or roller coaster • Recording outdoors from inside a moving vehicle (for stable shooting)	1/1000 or 1/250
• Instead of using the ND2 (neutral density) filter (To reduce the exposure level to about half) • Recording indoor sports (for stable shooting)	1/100

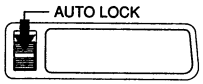
Selecting the Shutter Speed

You can select the shutter speed from 1/60 to 1/10000.



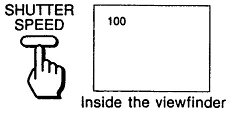


1 Slide the AUTO LOCK switch down to turn off the AUTO LOCK lamp.



2 Press SHUTTER SPEED repeatedly until the desired shutter speed indicator appears inside the viewfinder.
Each time you press the button, the indicator changes as follows:

No indication (1/60) → 100 (1/100)
↑ ↓
250 (1/250)
↓
10000 (1/10000) 1000 (1/1000)
↑ ↓
4000 (1/4000) ← 2000 (1/2000)

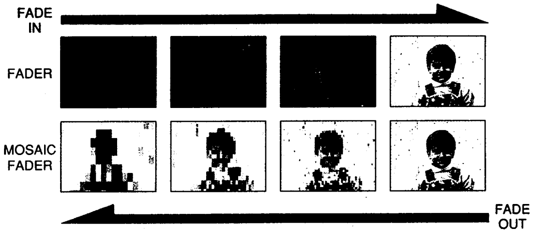


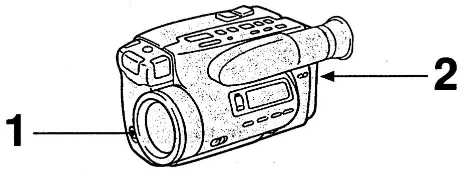
Note on shutter speed

- When you select shutter speed 1/250 or faster, record under sunlight or use a video light.

Fade-in and Fade-out

You can fade a picture in or out with the sound to give your recording a professional touch. When fading-in, you can make the picture gradually appear from black or mosaic while increasing the sound. When fading-out, you can make the picture gradually fade to black or mosaic while decreasing the sound.





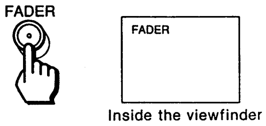
1 Select the type of fade by pressing FADER as follows:

(a) When fading-in, press it after turning STANDBY up to put the camcorder into standby mode. The fade indicator starts flashing.
(b) When fading-out, press it while recording.
The fade indicator starts flashing.

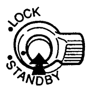
Note on the FADER button

Each time you press FADER, the indicator changes as follow:

FADER (black fade) → M. FADER (mosaic fade) → No indicator
↑



2 Press START/STOP.
When fading-in, the fade indicator stops flashing and the recording starts fading in.
When fading-out, the fade indicator stops flashing, the picture fades out, and then the recording stops.



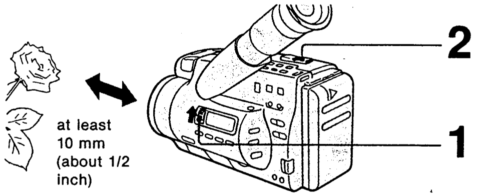
Canceling the fade-in/fade-out function

Before pressing START/STOP, press FADER so that the FADER indicator disappears.

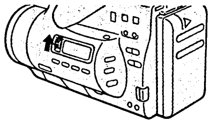
Close-up (Macro)

This section shows you how to shoot small subjects such as flowers, insects and photographs.

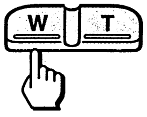
You can shoot subjects that are at least 10 mm (about 1/2 inch) away from the lens surface.

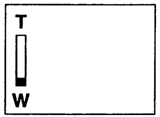


1 **Slide the AUTO LOCK switch up to turn on the AUTO LOCK lamp.**



2 **Press the W side of the power zoom button until the indicator inside the viewfinder stops at the W end.**





Inside the viewfinder

Manual adjustment

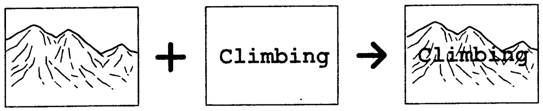
You can shoot with manual focus while doing close ups. For details, see page 31.

Note

When doing close ups, the depth of field (distance range of the subject that will be in sharp focus) is very shallow, so pay attention to focusing. To keep the subject in focus, use a tripod.

Superimposing Text

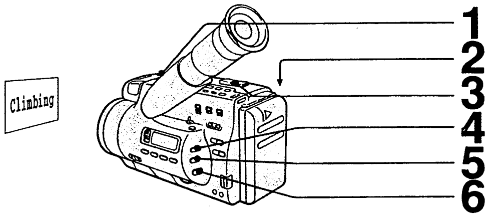
This section shows you how to superimpose your own hand written message (title) or graphics over the scene.



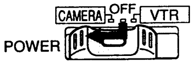
Inside the viewfinder

Storing a Title

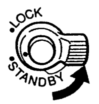
You can store one title at a time.
Before you store the title, first make a card for the title. Use a plain, white card and write a title with a dark-colored marker in thick letters. You can also use the available graphics or a sign if they are thick enough and have contrast.
Before you begin, make sure that the lithium battery is installed.



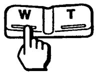
1 **While pressing the small green button on the POWER switch, slide it to CAMERA.**



2 **Turn STANDBY up to put the camcorder into standby mode.**



3 **Point the camcorder at the title card and adjust the focus.**



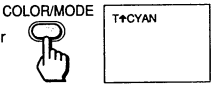
4 **Press MEMORY to store the title.**

MEMORY

5 Press COLOR/MODE and select the title color.

Each time you press the button, the color indicator changes as follows:

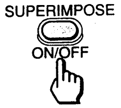
WHT (white) → BLUE → GRN (green) → CYAN
↑ ↓
BLK (black) ← YEL (yellow) ← VIO (violet) ← RED



Inside the viewfinder

6 Press SUPERIMPOSE ON/OFF to turn off the title.

Now, the title is stored in memory.

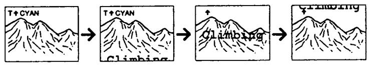
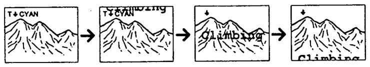
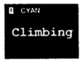
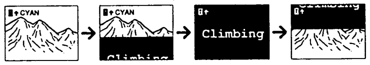
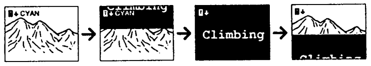


Checking the title

Press SUPERIMPOSE ON/OFF in standby mode.
To turn off the title, press the button again.

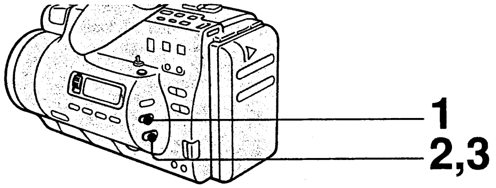
Selecting the display mode of the title

You can scroll your title up or down like scrolling credits in a movie. Also, you can reverse the title.

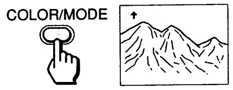
Display mode	Indicator inside the viewfinder
Scrolling up the title The title scrolls up and stops at the center. 	↑
Scrolling down the title The title scrolls down and stops at the center. 	↓
Reversing the title with the picture 	T
Scrolling up the reversed title 	T↑
Scrolling down the reversed title 	T↓
Normal display mode	No indicatior

Superimposing a Title on Your Tape

The following example shows you how to superimpose a title with the scrolling up effect.
The color and the display mode indicators inside the viewfinder will not be recorded.
Before superimposing the title, store it (page 39).

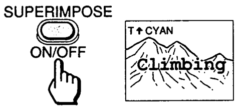


1 In standby mode, press COLOR/MODE to select the display mode of the title.
(For display modes of the title, see page 40.)

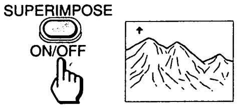


Inside the viewfinder

2 In standby mode, press SUPERIMPOSE ON/OFF at the point you want to insert the title.
The title appears.



3 At the point you want to turn off the title, press SUPERIMPOSE ON/OFF again.
The title goes out.



Function of the COLOR/MODE button

This button has two functions: one is to select the title color and the other is to select the title display mode.
If the title is displayed, this button acts as the color selection button, but if it is not, it acts as the mode select button.

To superimpose a title at the beginning

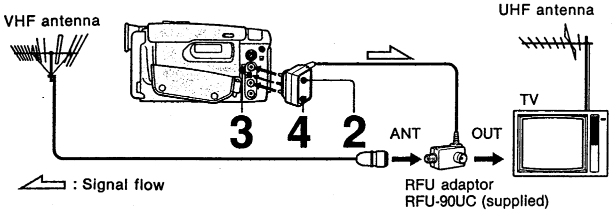
1 Set the camcorder to standby mode.
2 Press SUPERIMPOSE ON/OFF.
3 Start recording with the title displayed inside the viewfinder.
4 At the point you want to turn off the title, press SUPERIMPOSE ON/OFF again.

Playing Back a Tape

This section describes several other methods to connect your camcorder to your TV depending on the type of the TV in order to play back a picture on the TV.
To connect a TV that has video/audio inputs, see page 18.

If Your TV Has Only an Antenna Input

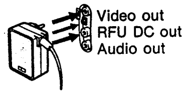
Use the supplied RFU adaptor to connect your camcorder to the TV. Make sure that the TV is turned off to prevent speaker damage before hooking up to your camcorder. The sound will be in monaural.



To connect your camcorder to a TV that already has a regular TV (VHF) antenna attached, you need to do the following procedure.

1 Unplug the antenna cable from the TV.
Plug the tail-end marked OUT of the RFU adaptor into the antenna input of your TV. Re-wire the antenna cable you unplugged to the RFU adaptor marked ANT.
This way, you can switch between TV broadcasts and your home video playback without re-wiring.

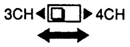
2 Connect the RFU adaptor to the camcorder.



3 Slide the INPUT/OUTPUT switch on the camcorder to OUTPUT.

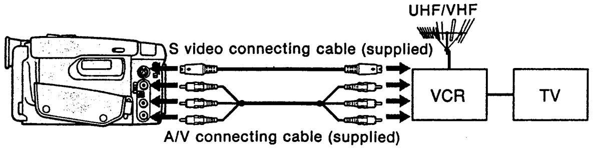
INPUT
OUTPUT

4 Set the channel selector on the RFU adaptor (and your TV channel) to 3CH or 4CH of the VHF channel, whichever is not active (vacant) in your area.



Connecting to a TV via a VCR

You can connect the camcorder to a TV via a VCR.


UHF/VHF
S video connecting cable (supplied)
VCR
TV
A/V connecting cable (supplied)

1 Connect the camcorder to the VCR using the supplied A/V connecting cable.
  - If your TV has an S video input jack, connect it to the S VIDEO jack on the camcorder using the S video connecting cable (supplied). In this case, you do not need to connect the yellow (video) plug of the A/V connecting cable.
  - If your TV is a monaural type, connect only the white plug for audio both on the camcorder and the TV. Do not use the red plug. In this case, the sound will be in monaural.

2 Slide the INPUT/OUTPUT switch on the camcorder to OUTPUT.
3 Set the TV/VCR selector on the TV to VCR.

Various Playback Modes

Still picture (playback pause)

To view a still picture, press ❚❚ PAUSE during playback.
❚❚ appears in the display window.
To resume normal playback, press ▷ or ❚❚.

Note
When still picture mode lasts for 5 minutes or more, the camcorder automatically stops.

High-speed picture search

To monitor a picture in high-speed and locate a desired scene quickly, keep pressing ◀◀ or ▶▶ during playback.
To resume normal playback, release the button.

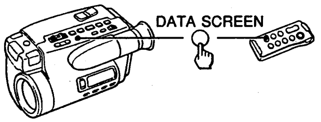
High speed search during fastfoward or rewind (skip scan)

You can also go into high speed seach during fastfoward or rewind to locate a desired scene more quickly. Press ◀◀ while rewinding or ▶▶ while advancing the tape.
To resume normal playback, press ▷

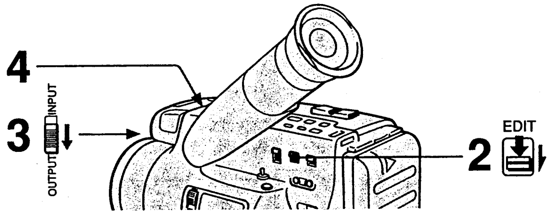
Note
During various playback modes, streaks appear on the screen and the sound is muted.

Displaying the viewfinder screen indicators on the TV

Press DATA SCREEN on the camcorder or the Remote Commander.
The indicator in the viewfinder screen appears ono the TV.
To erase the indicator, press DATA SCREEN again.



How to edit



1 **Insert a tape to be recorded into the recording VCR.**
2 **Slide EDIT on the camcorder in the direction of the arrow.**
The EDIT switch optimizes the video signal when editing to another VCR.
3 **Make sure that INPUT/OUTPUT is set to OUTPUT.**
4 **While pressing the small green button on the POWER switch, slide it to VTR.**
5 **Insert your recorded tape into the camcorder.**
6 **Play back the tape on the camcorder until you locate the point where you want to start editing, then set the camcorder to the playback pause mode.**
7 **On the recording VCR, locate the recording start point and set the VCR to the recording pause mode.**
8 **Press ❚❚ PAUSE on the camcorder and VCR simultaneously to start editing.**

To edit more scenes
Repeat steps 6 to 8.

To stop editing
Press □ on both the camcorder and the VCR.

Use of the EDITSEARCH button
You can play back a tape in normal/reverse direction by keep pressing EDITSEARCH during recording pause or playback pause. You can also play back still pictures successively at specific intervals by pressing EDITSEARCH intermittently.

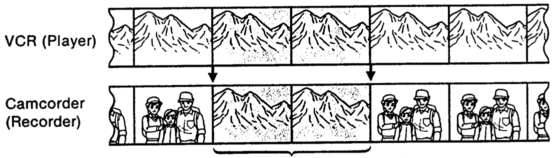
Use of the EDIT switch
When you slide EDIT in the direction of the arrow (EDIT ON), you can keep picture and deteriorations resulting from editing to a minimum. However, when you edit or copy to another VCR, avoid using the edited tape for multiple generations of editing. After editing, be sure to set this switch in the opposite direction of the arrow (EDIT OFF).

Note on DATA SCREEN function
If you have displayed the viewfinder screen indicators on the TV (DATA SCREEN function), erase the indicators by pressing DATA SCREEN so that they will not be superimposed on the edited tape.

Note on the Data Code singnal
Data code signal is not output from the S VIDEO or VIDEO jack on the camcorder. But, you can record the recording date or time displayed on the TV or inside the viewfinder onto the editing tape.

Replacing Recording on a Tape (Insert Editing)

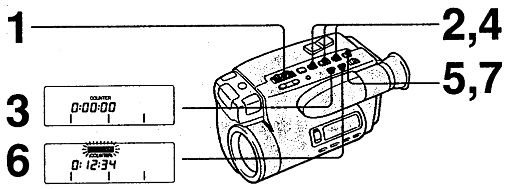
You can insert a new scene from a VCR onto your originally recorded tape by specifying starting and ending points.



Newly inserted portion (previously recorded portion is exposed).

Connection
Connections are the same as in "Recording from a VCR or TV (page 45)". Before you begin replacing recordings, **set the VCR to the playback pause mode at the beginning of the scene to be recorded.**

To replace recordings



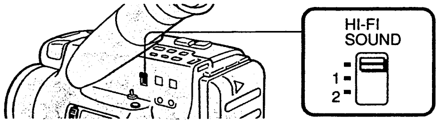
1 **While pressing the small green button on the POWER switch, slide it to VTR.**
The counter appears in the display window.
2 **Locate the end point where the insert should end by pressing ◀◀ or ▶▶ during playback.**
The viewfinder screen shows a high-speed playback picture.
3 **At the end point, press RESET.**
The counter resets to "0:00:00".
4 **Locate the start point where the insert should begin by pressing ◀◀.**
5 **At the start point, put the camcorder into recording pause mode.**
6 **Press ZERO MEM.**
The end point of the insert is stored in memory.
The ZERO MEM indicator flashes in the display window.
7 **Press ❚❚ on both the camcorder and the VCR to start insert editing.**
You can monitor the picture being inserted inside the viewfinder.
The insert recording stops automatically near the zero point on the counter.

To change the end point
Press ZERO MEM so that the ZERO MEM indicator disappears, and begin from step 2.

Playing Back a Tape

Selecting the monitor sound

You can select the playback sound with the HI-FI SOUND switch.


HI-FI
SOUND
1
2

- Normally, set the HI-FI SOUND switch to the "Green position".
- When you play back a tape with monaural sound, monaural sound will come out from the both audio jacks with the switch set to the "Green position".
- Set the switch to "1" or "2" only when playing back a dual sound track tape such as a bilingual soundtrack tape.

In playback pause mode

You can view the picture in a sequence of stop-motion images by pressing EDITSEARCH. If you keep pressing EDITSEARCH, you can view the picture playback in forward or reverse direction.

Displaying the Recording Date or Time -- Data Code Function

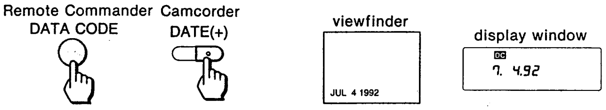
Even if you didn't record date or time, you can display the recording date or time (data code) on the TV during playback or editing. You can also display the data code inside the viewfinder and in the display window at the same time. Each time you press DATA CODE on the Remote Commander, the display changes as follows:

Date → Time → No indicator
↑___________________|

Displaying the recording date

Press DATE (+) on the camcorder, or press DATA CODE on the Remote Commander.

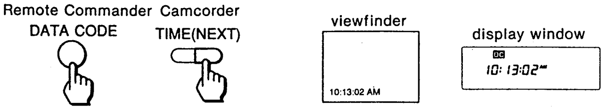
To erase the date, press DATE (+) again or DATA CODE twice.


Remote Commander
DATA CODE
Camcorder
DATE(+)
viewfinder
JUL 4 1992
display window
DC
7. 4.92

Displaying the recording time

Press TIME (NEXT) on the camcorder, or press DATA CODE on the Remote commander twice.

To erase the time, press TIME (NEXT) or DATA CODE again.


Remote Commander
DATA CODE
Camcorder
TIME(NEXT)
viewfinder
10:13:02 AM
display window
DC
10: 13:02AM

Note on the data code

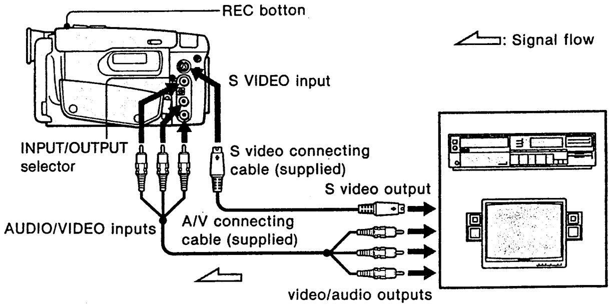
When bars(– : – – : – –) appear in place of the data code, it indicates:

- A blank portion of the tape is being played back.
- The tape was recorded in LP mode.
- The tape was recorded by another camcorder without a data code function.
- The tape is unreadable due to tape damage or noise.
- The tape is recorded without having date and time set.

Recording

Recording from a VCR or TV

You can record a tape from another VCR, or a TV program from the TV equipped with video/audio outputs.


REC botton
: Signal flow
S VIDEO input
INPUT/OUTPUT selector
S video connecting cable (supplied)
S video output
AUDIO/VIDEO inputs
A/V connecting cable (supplied)
video/audio outputs

- Disconnect the RFU adaptor from the camcorder if it is connected.
- Make the connections using the suupplied A/V connecting cable.
- If your TV has an S video output jack, connect it to the S VIDEO jack on the camcorder using the S video connecting cable (supplied). In this case, you do not need to connect the yellow (video) plug of the A/V connecting cable.
- If your TV is a monaural type, connect only the white plug for audio both on the camcorder and the TV or the VCR. Do not use the red plug. In this case, the sound will be in monaural.
- When the cable plugs are connected to both the S VIDEO jack and the VIDEO jack on the camcorder, the signal input to S VIDEO is selected automatically. To use VIDEO jack, disconnect the S video connecting cable.

To record

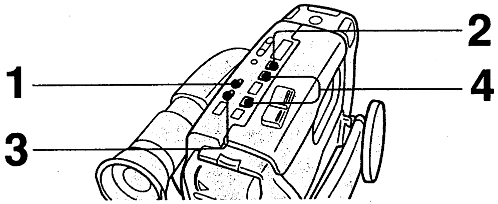
1. **Make sure that the INPUT/OUTPUT selector is set to INPUT.**
2. **Set the POWER switch on the camcorder to VTR.**
3. **Insert a tape in the camcorder.**
4. **Turn on the VCR or TV.**
5. **Play back the tape (in another VCR) or select the TV channel to be recorded.**
6. **Slide ● REC in the direction of the arrow.**
   Recording starts. You can monitor the picture being recorded inside the viewfinder.

Using the Tape Counter

The tape counter tells you the actual recording or playback time. You can also use the tape counter to memorize a specific point on the tape.
The tape counter does not work on blank portions of the tape.

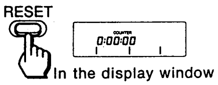
To count the whole tape
Press RESET at the beginning of the tape so that the counter shows "0:00:00".

To return to a preset point



1 **During playback, press RESET at the point you later want to locate.**

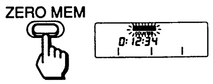
The counter shows "0:00:00".


RESET
0:00:00
In the display window

2 **Press □ when playback has finished, as usual.**

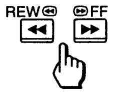
3 **Press ZERO MEM.**
The "ZERO MEM" indicator flashes.

Note
The ZERO MEM does not function during recording or playback.


ZERO MEM
0:12:34

4 **Press ◀◀ or ▶▶.**

The tape rewinds or advances and stops automatically when the counter reaches approximately zero.

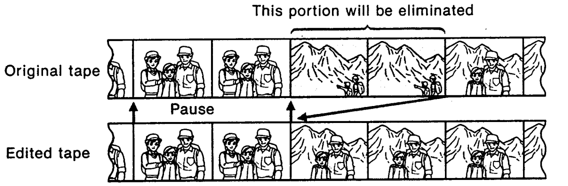


Note

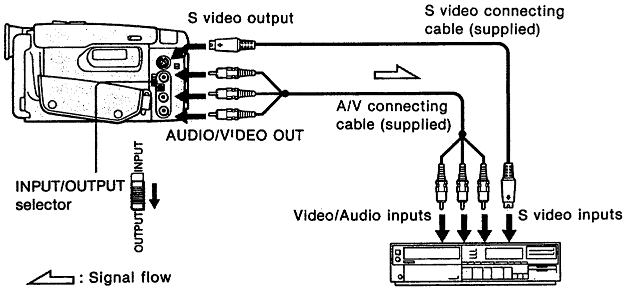
The counter reading and the point on the tape may not correspond exactly. Use the counter as a guide. There will be a time lag of several seconds especially when you fast-forward or rewind repeatedly and also if you play back a tape recorded in LP (Long play) and SP (Standard Play) modes mixed.

Editing Tapes with a VCR

You can create your own video program by editing with any other 8 8mm, Hi 8 Hi8 mm, β Betamax, ED Beta ED Betamax, VHS VHS, S-VHS S-VHS, VHS C VHSC, S-VHS C S-VHSC VCRs that has video/audio inputs.

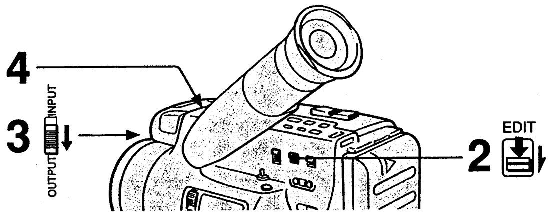

This portion will be eliminated
Original tape
Pause
Edited tape

Connection


S video output
S video connecting cable (supplied)
A/V connecting cable (supplied)
AUDIO/VIDEO OUT
INPUT/OUTPUT selector
INPUT
OUTPUT
Video/Audio inputs
S video inputs
: Signal flow

1 Connect the camcorder and the VCR using the supplied A/V connecting cable.
2 Set the input selector on the VCR to LINE, if available.
- If your VCR has an S video input jack, connect it to the S VIDEO jack on the camcorder using the S video connecting cable (supplied). In this case, you do not need to connect the yellow (video) plug of the A/V connecting cable.
- If your VCR is a monaural type, connect only the white plug for audio both on the camcorder and the VCR. Do not use the red plug. In this case, the sound will be in monaural.

How to edit



1. **Insert a tape to be recorded into the recording VCR.**
2. **Slide EDIT on the camcorder in the direction of the arrow.**
   The EDIT switch optimizes the video signal when editing to another VCR.
3. **Make sure that INPUT/OUTPUT is set to OUTPUT.**
4. **While pressing the small green button on the POWER switch, slide it to VTR.**
5. **Insert your recorded tape into the camcorder.**
6. **Play back the tape on the camcorder until you locate the point where you want to start editing, then set the camcorder to the playback pause mode.**
7. **On the recording VCR, locate the recording start point and set the VCR to the recording pause mode.**
8. **Press ❚❚ PAUSE on the camcorder and VCR simultaneously to start editing.**

To edit more scenes
Repeat steps 6 to 8.

To stop editing
Press ☐ on both the camcorder and the VCR.

Use of the EDITSEARCH button
You can play back a tape in normal/reverse direction by keep pressing EDITSEARCH during recording pause or playback pause. You can also play back still pictures successively at specific intervals by pressing EDITSEARCH intermittently.

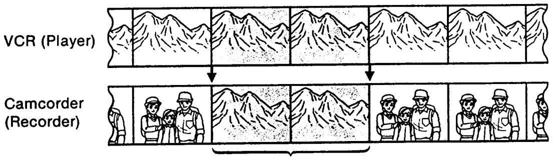
Use of the EDIT switch
When you slide EDIT in the direction of the arrow (EDIT ON), you can keep picture and deteriorations resulting from editing to a minimum. However, when you edit or copy to another VCR, avoid using the edited tape for multiple generations of editing. After editing, be sure to set this switch in the opposite direction of the arrow (EDIT OFF).

Note on DATA SCREEN function
If you have displayed the viewfinder screen indicators on the TV (DATA SCREEN function), erase the indicators by pressing DATA SCREEN so that they will not be superimposed on the edited tape.

Note on the Data Code singnal
Data code signal is not output from the S VIDEO or VIDEO jack on the camcorder. But, you can record the recording date or time displayed on the TV or inside the viewfinder onto the editing tape.

Replacing Recording on a Tape (Insert Editing)

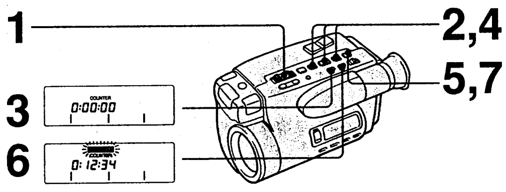
You can insert a new scene from a VCR onto your originally recorded tape by specifying starting and ending points.



Newly inserted portion (previously recorded portion is exposed).

Connection
Connections are the same as in "Recording from a VCR or TV (page 45)". Before you begin replacing recordings, **set the VCR to the playback pause mode at the beginning of the scene to be recorded.**

To replace recordings



1. **While pressing the small green button on the POWER switch, slide it to VTR.**
   The counter appears in the display window.
2. **Locate the end point where the insert should end by pressing ◀◀ or ▶▶ during playback.**
   The viewfinder screen shows a high-speed playback picture.
3. **At the end point, press RESET.**
   The counter resets to "0:00:00".
4. **Locate the start point where the insert should begin by pressing ◀◀.**
5. **At the start point, put the camcorder into recording pause mode.**
6. **Press ZERO MEM.**
   The end point of the insert is stored in memory.
   The ZERO MEM indicator flashes in the display window.
7. **Press ❚❚ on both the camcorder and the VCR to start insert editing.**
   You can monitor the picture being inserted inside the viewfinder.
   The insert recording stops automatically near the zero point on the counter.

To change the end point
Press ZERO MEM so that the ZERO MEM indicator disappears, and begin from step 2.

Usable Cassettes and Recording/Playback Modes

This section describes the usable cassettes and recording/playback modes with your camcorder.

Selecting Cassette Types

The Hi8 system is an extension of the standard 8 mm system, and was developed for a higher-quality picture.
You can use Hi8 video and standard 8 mm cassettes with your camcorder.
But, when you want to record in Hi8 system, you can use only the Hi8 video cassettes. A standard 8 mm cassette cannot be recorded in the Hi8 system.

When the Hi8 AUTO/OFF switch is set to AUTO, the recording system is automatically selected according to the type of cassette you're using.
— Hi8 cassette recorded in the Hi8 system.
— Standard 8 mm cassette recorded in the standard 8 mm system.

If you use a Hi8 cassette in the standard 8 mm recording system, set the Hi8 AUTO/OFF switch to OFF while recording.

To Record in	Use Cassette Type	Set the Hi8 AUTO/OFF switch to
Hi8 Hi8 system	Hi8 type	AUTO
Standard 8 mm 8 system	Hi8 type	OFF
	Standard 8 mm type	AUTO or OFF

If you are going to play back the tape using a standard 8 mm video recorder, you should record the tape in the standard 8 mm system.

When You Play Back

The Playback mode is selected automatically according to the recording system (Hi8/standard 8mm, SP/LP) with which the tape has been recorded.

AFM Hi-Fi stereo
In the following cases, the sound will be in monaural.
- When you play back a tape recorded with this camcorder on an AFM Hi-Fi monaural video recorder.
- If you play back a tape with this camcorder that has been recorded on AFM Hi-Fi monaural video recorder.

Dual sound
You can playback a dual sound recorded tape.
Set the Hi-Fi SOUND switch to "1" or "2". For details, see page 44.

Foreign 8 mm video
You may not be able to play back foreign pre-recorded software because of the difference in the TV color systems.

LP mode
When you play back a tape recorded in LP (long play) mode, the LP indicator lights up inside the viewfinder. This camcorder cannot record tape in LP mode.

RC time code
This camcorder automatically marks the RC time code during camera recording, but cannot display the RC time code in the viewfinder and display window during playback or editing. When you want to display the RC time code, use the camcorder with the RC time code displaying function.

Maintenance Information

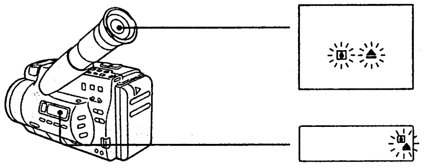
This section shows you how to maintain the camcorder.

Moisture Condensation

If the camcorder is brought directly from a cold place to a warm place, moisture may condense inside the camdcorder, on the surface of the tape, or on the lens.

In this condition, the tape may stick to the head drum and be damaged or the camcorder may not operate correctly. To prevent possible damage under these circumstances, the camcorder is furnished with moisture sensors. However, take the following precautions.

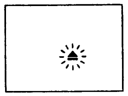
Inside the camcorder
If moisture condenses inside the camcorder, the 💧 indicator iniside the viewfinder and in the display window flashes. When the cassette is inserted, the ⏏ indicator also flashes.



If this happens, no other functions except for tape ejection will work.
Eject the tape, turn off the camcorder and leave it with the cassette holder open for at least 1 hour in a dry place.
The camcorder can be used again if the 💧 indicator does not appear when the power is turned on again.

On the surface of the tape
When the cassette is inserted and a tape transport button (▷, ▶▶, etc.) is pressed, the ⏏ indicator in the display window flashes.

Insuch case, no other functions except for tape ejection will work.
Eject the tape, turn off the camcorder and leave it with the cassette holder open for at least 1 hour in a dry place.
The camcorder can be used again if the ⏏ indicator does not appear when you insert the cassette and press one of the tape transport buttons.

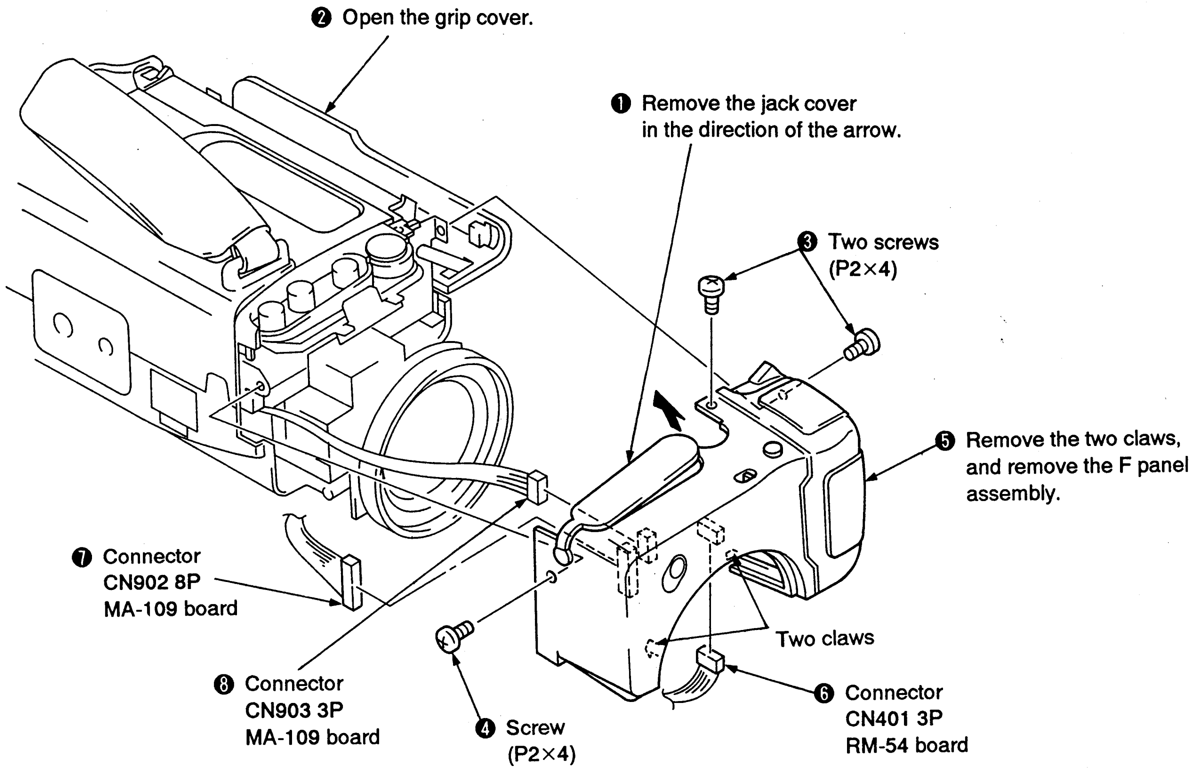


Inside the viewfinder

On the lens
If moisture condenses on the lens, no indicator appears, but the picture becomes dim. Turn off power and do not use the camcorder for about 1 hour.

SECTION 2
DISASSEMBLY

2-1. REMOVAL OF F PANEL ASSEMBLY


❷ Open the grip cover.

❶ Remove the jack cover in the direction of the arrow.

❸ Two screws (P2×4)

❺ Remove the two claws, and remove the F panel assembly.

❼ Connector CN902 8P MA-109 board

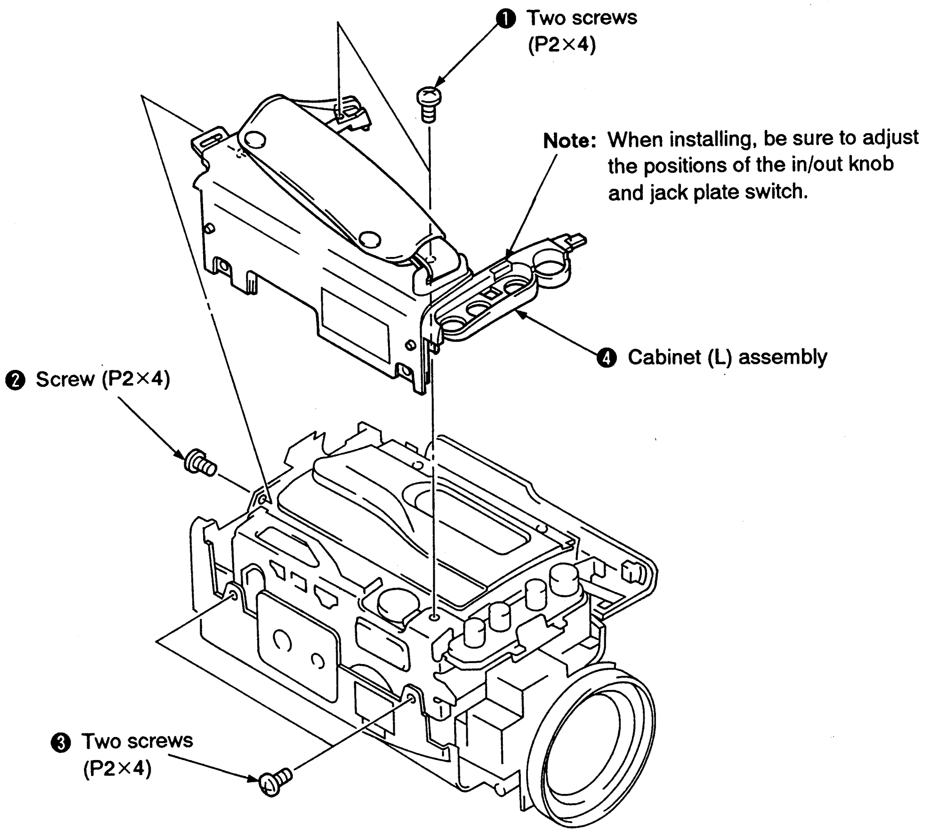
Two claws

❽ Connector CN903 3P MA-109 board

❹ Screw (P2×4)

❻ Connector CN401 3P RM-54 board

2-2. REMOVAL OF CABINET (L) ASSEMBLY


❶ Two screws (P2×4)

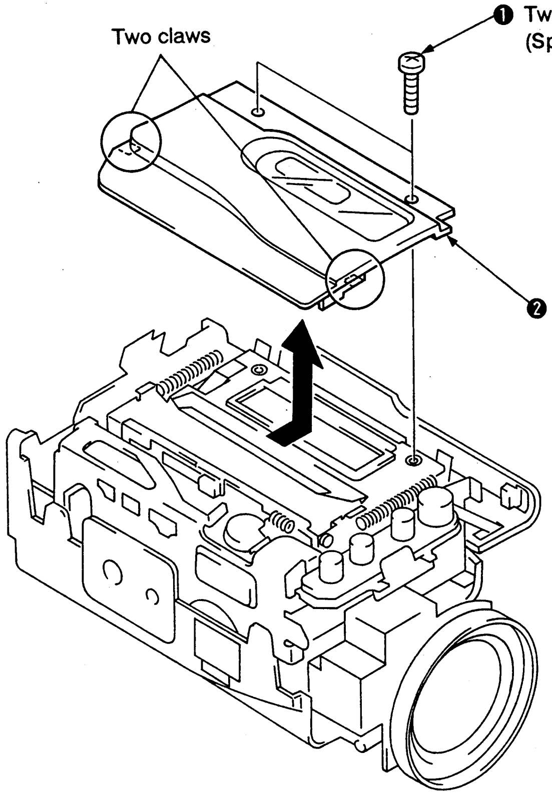
Note: When installing, be sure to adjust the positions of the in/out knob and jack plate switch.

❹ Cabinet (L) assembly

❷ Screw (P2×4)

❸ Two screws (P2×4)

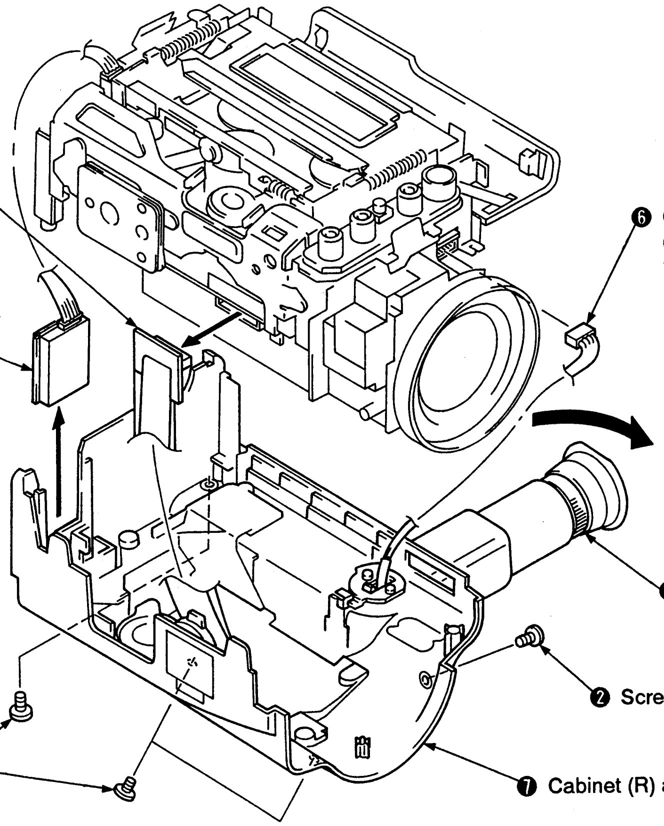
2-3. REMOVAL OF CASSETTE LID ASSEMBLY



① Two screws
(Special small screw M1.4)

② Remove the cassette cover assembly from the two claws as shown by the arrow.

2-4. REMOVAL OF CABINET (R) ASSEMBLY


① Rotate the EVF section as shown by the arrow.

② Screw (P2×4)

③ Three screws
(P2×4)

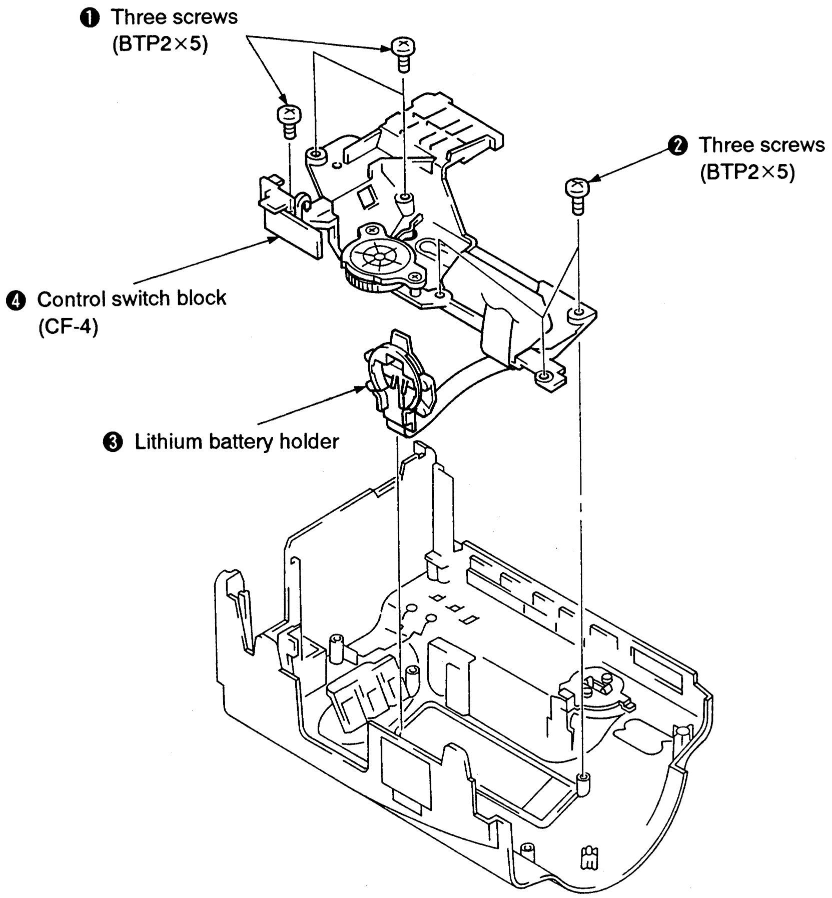
④ Battery terminal board

⑤ Connector.
CN922 48P
VC-103 board

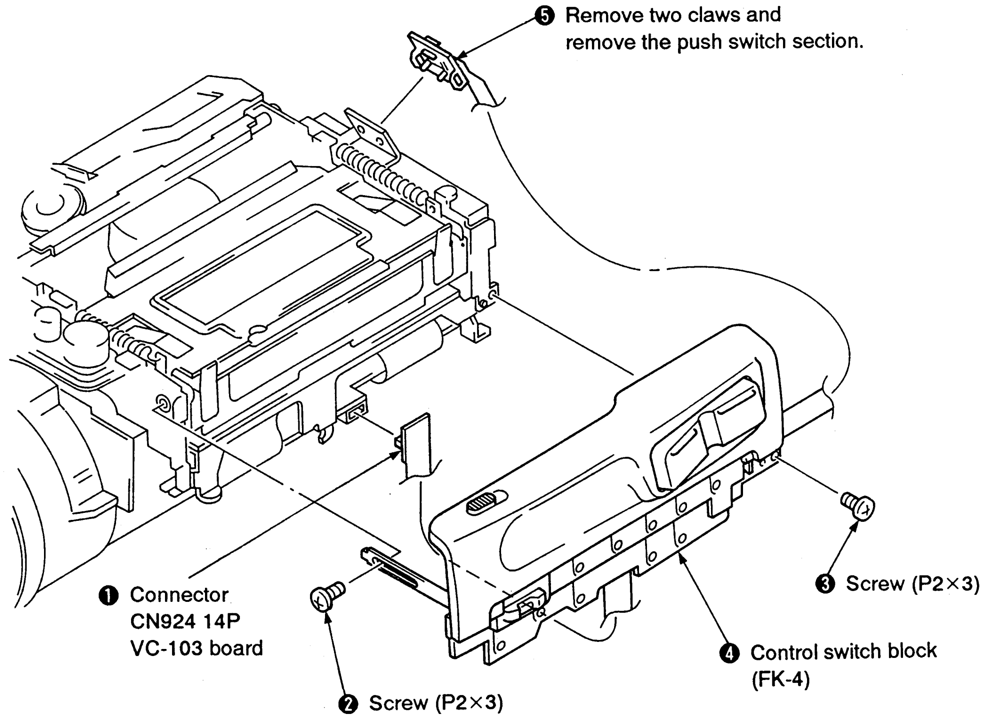
⑥ Connector.
CN301 6P
VS-84 board

⑦ Cabinet (R) assembly

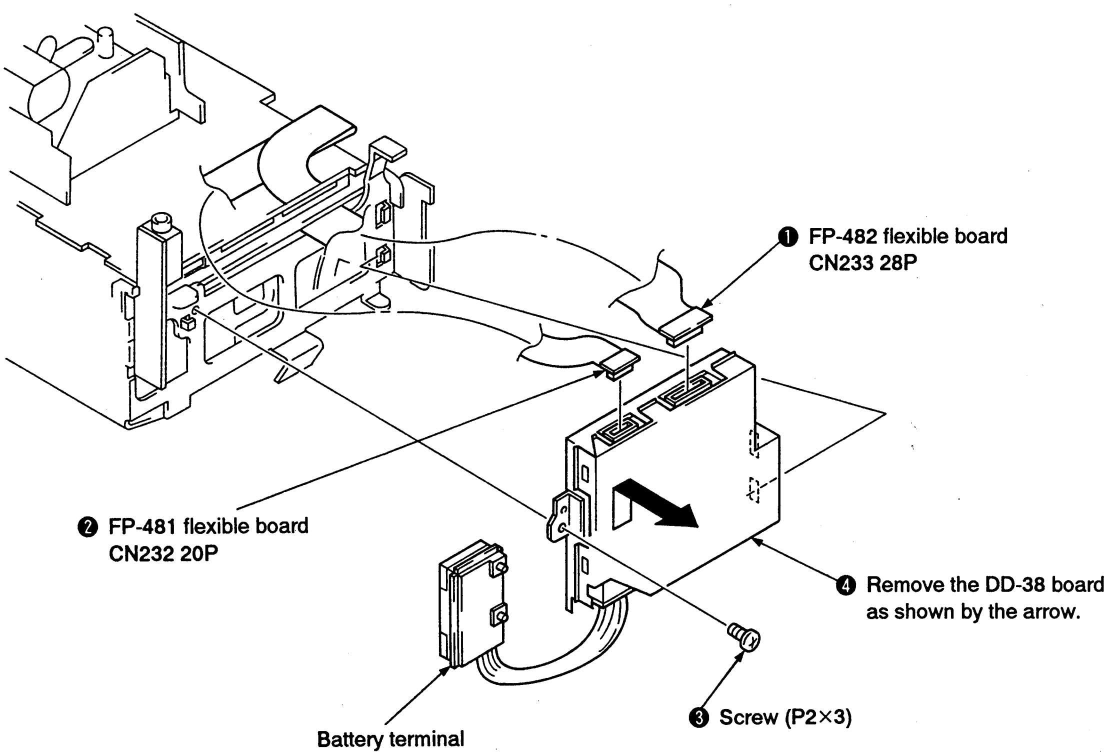
2-5. REMOVAL OF CONTROL SWITCH BLOCK (CF-4)


❶ Three screws
(BTP2×5)
❷ Three screws
(BTP2×5)
❹ Control switch block
(CF-4)
❸ Lithium battery holder

2-6. REMOVAL OF CONTROL SWITCH BLOCK (FK-4)

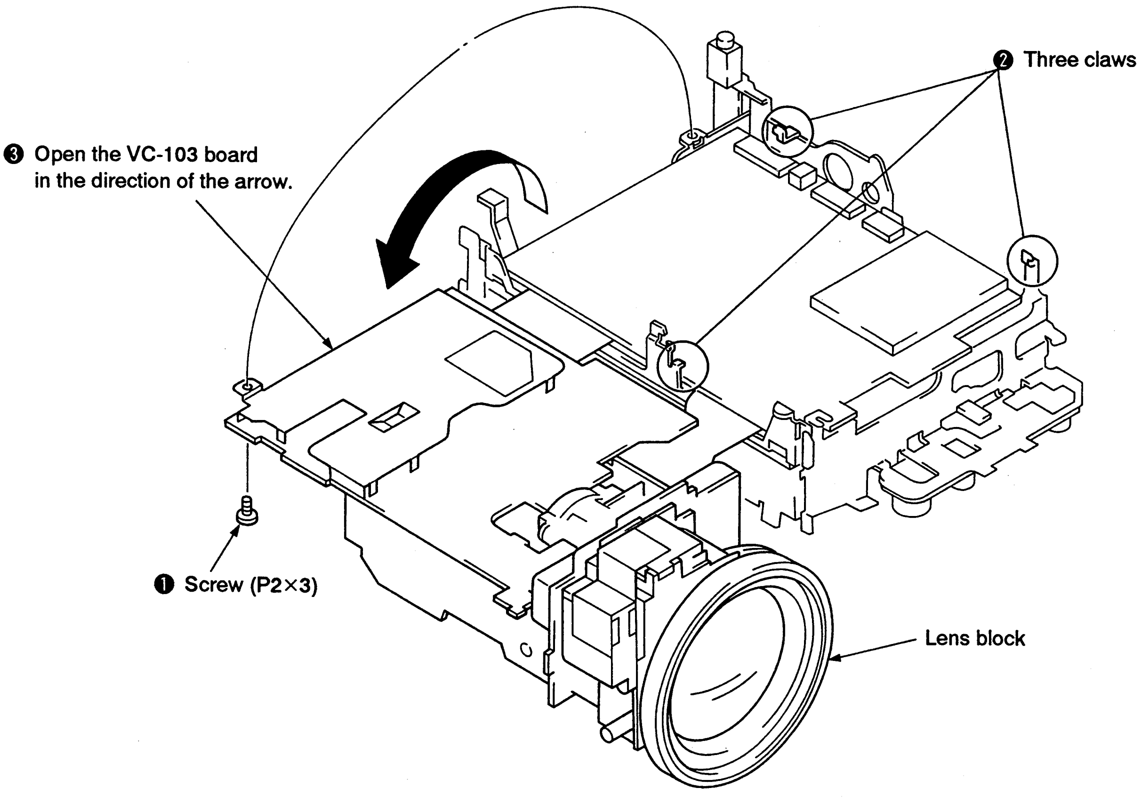

❺ Remove two claws and
remove the push switch section.
❶ Connector
CN924 14P
VC-103 board
❷ Screw (P2×3)
❸ Screw (P2×3)
❹ Control switch block
(FK-4)

2-7. REMOVAL OF DD-38 BOARD (DC-DC CONVERTER UNIT)



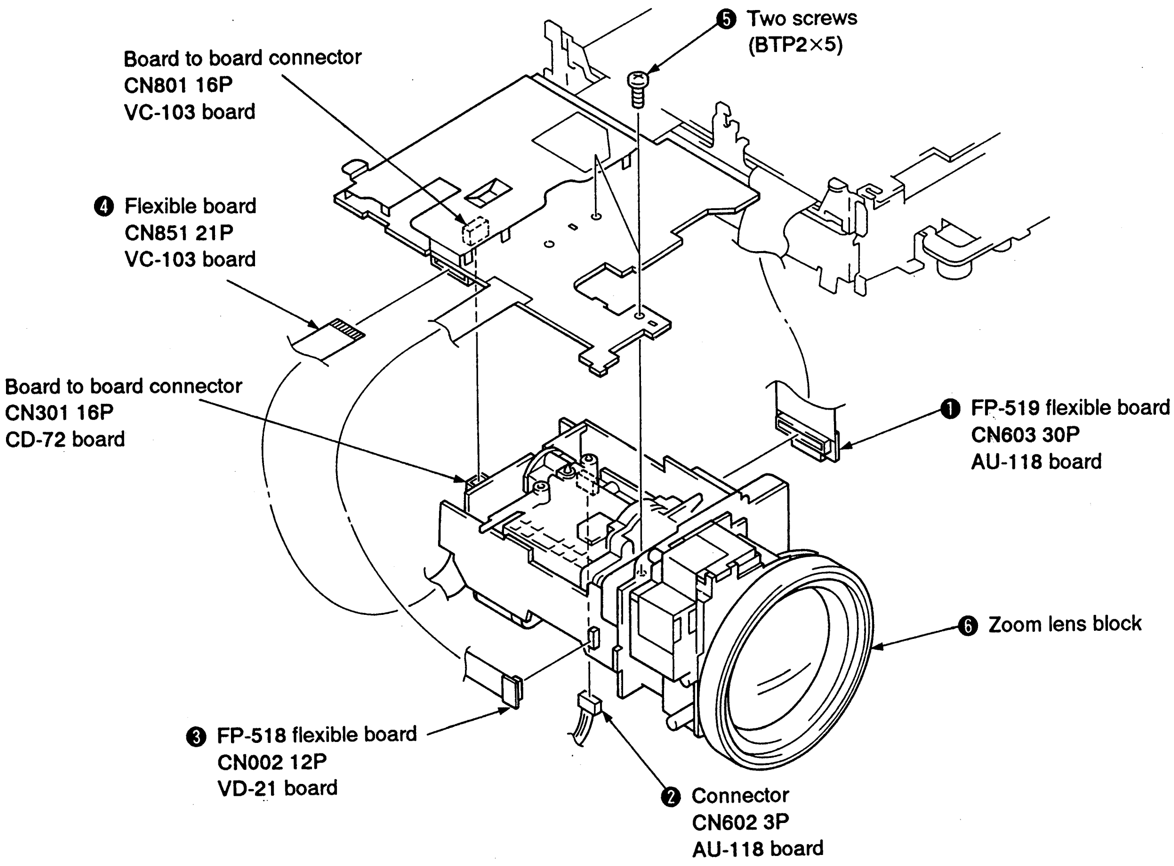
❶ FP-482 flexible board CN233 28P
❷ FP-481 flexible board CN232 20P
❹ Remove the DD-38 board as shown by the arrow.
❸ Screw (P2×3)
Battery terminal

2-8. OPENING OF VC-103 BOARD



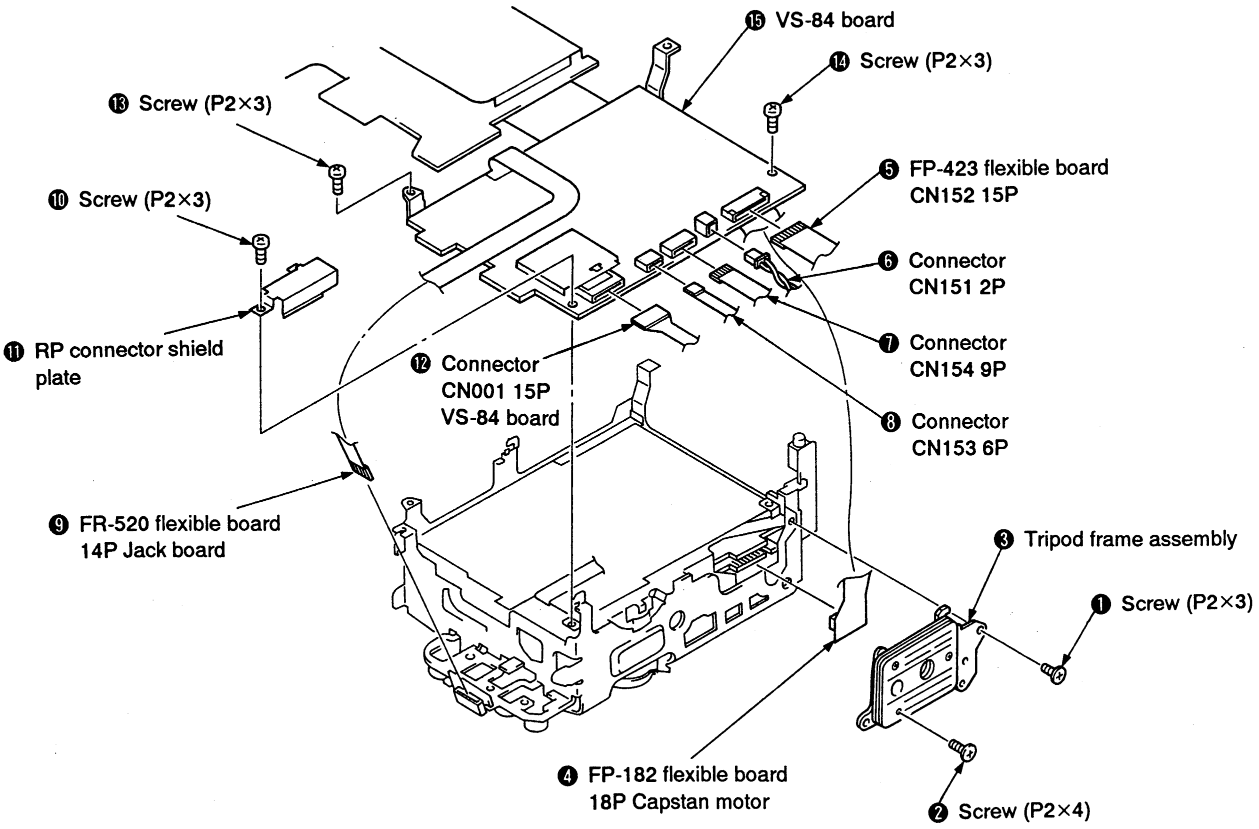
❷ Three claws
❸ Open the VC-103 board in the direction of the arrow.
❶ Screw (P2×3)
Lens block

2-9. REMOVAL OF ZOOM LENS ASSEMBLY



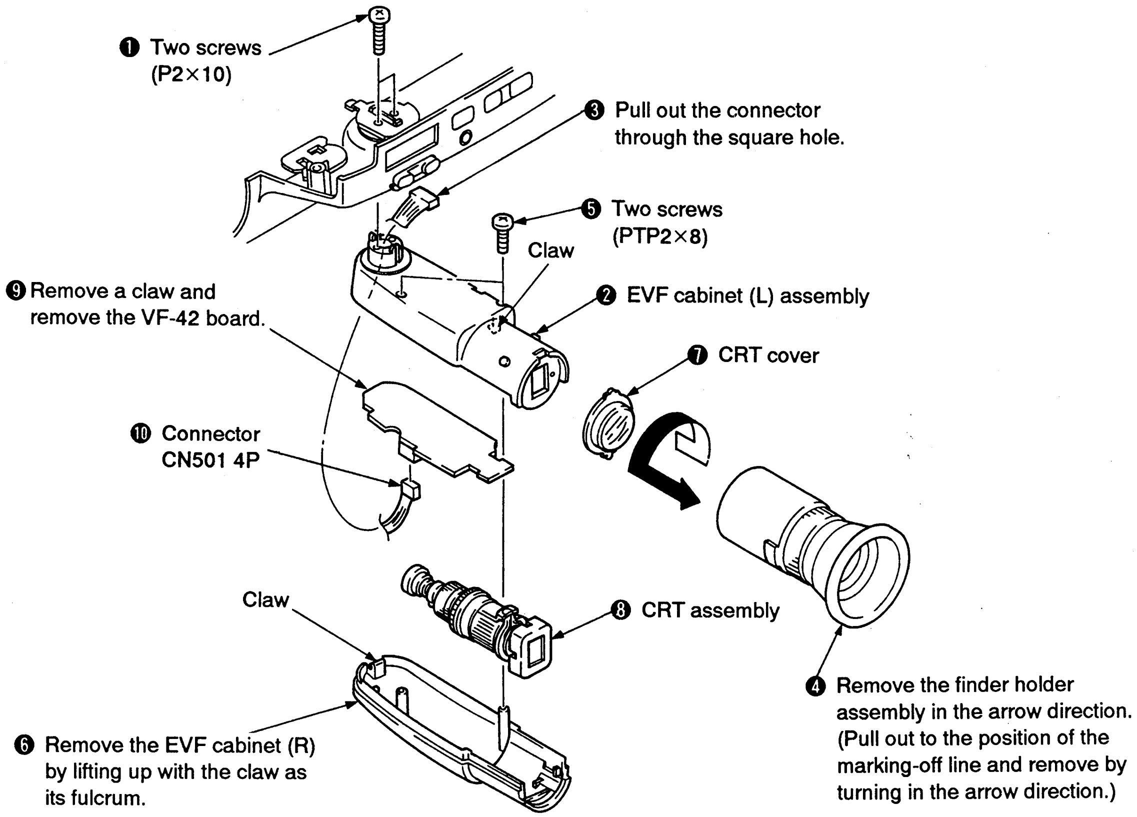
❺ Two screws (BTP2×5)
Board to board connector CN801 16P VC-103 board
❹ Flexible board CN851 21P VC-103 board
Board to board connector CN301 16P CD-72 board
❶ FP-519 flexible board CN603 30P AU-118 board
❻ Zoom lens block
❸ FP-518 flexible board CN002 12P VD-21 board
❷ Connector CN602 3P AU-118 board

2-10. REMOVAL OF VS-84 BOARD



⓯ VS-84 board
⓮ Screw (P2×3)
⓭ Screw (P2×3)
❿ Screw (P2×3)
❺ FP-423 flexible board CN152 15P
❻ Connector CN151 2P
⓫ RP connector shield plate
⓬ Connector CN001 15P VS-84 board
❼ Connector CN154 9P
❽ Connector CN153 6P
❾ FR-520 flexible board 14P Jack board
❸ Tripod frame assembly
❶ Screw (P2×3)
❹ FP-182 flexible board 18P Capstan motor
❷ Screw (P2×4)

2-11. REMOVAL OF EVF ASSEMBLY (VF-42 BOARD)


① Two screws (P2×10)

③ Pull out the connector through the square hole.

⑤ Two screws (PTP2×8)

⑨ Remove a claw and remove the VF-42 board.

② EVF cabinet (L) assembly

⑦ CRT cover

⑩ Connector CN501 4P

⑧ CRT assembly

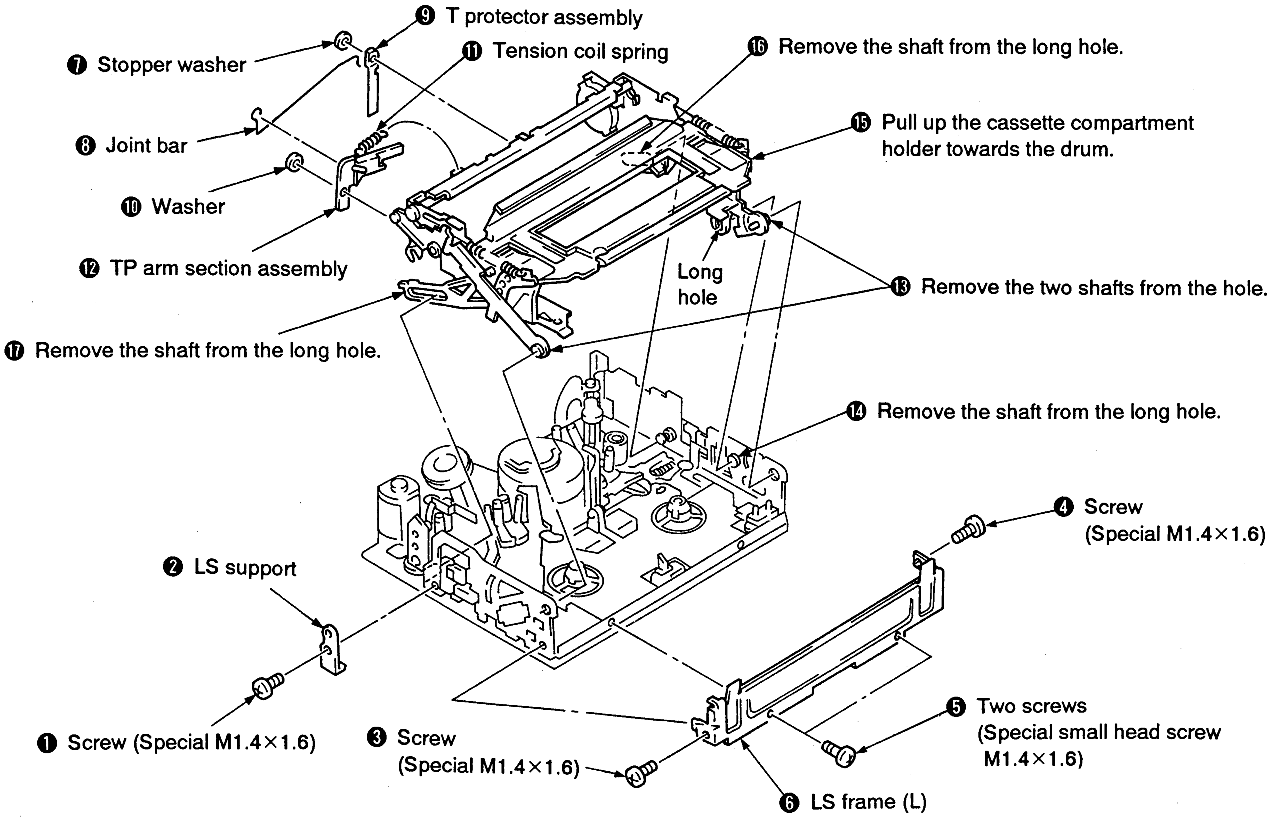
④ Remove the finder holder assembly in the arrow direction. (Pull out to the position of the marking-off line and remove by turning in the arrow direction.)

⑥ Remove the EVF cabinet (R) by lifting up with the claw as its fulcrum.

2-12. REMOVAL OF CASSETTE COMPARTMENT HOLDER ASSEMBLY

In the beginning, set to USE mode.

(When setting to USE mode, see "2-4. Handling of Mode Selector" in "8 mm video mechanical adjustment manual II FL Mechanism (Q mechanism)".)


⑨ T protector assembly

⑦ Stopper washer

⑪ Tension coil spring

⑯ Remove the shaft from the long hole.

⑧ Joint bar

⑮ Pull up the cassette compartment holder towards the drum.

⑩ Washer

⑫ TP arm section assembly

⑬ Remove the two shafts from the hole.

⑰ Remove the shaft from the long hole.

⑭ Remove the shaft from the long hole.

④ Screw (Special M1.4×1.6)

② LS support

⑤ Two screws (Special small head screw M1.4×1.6)

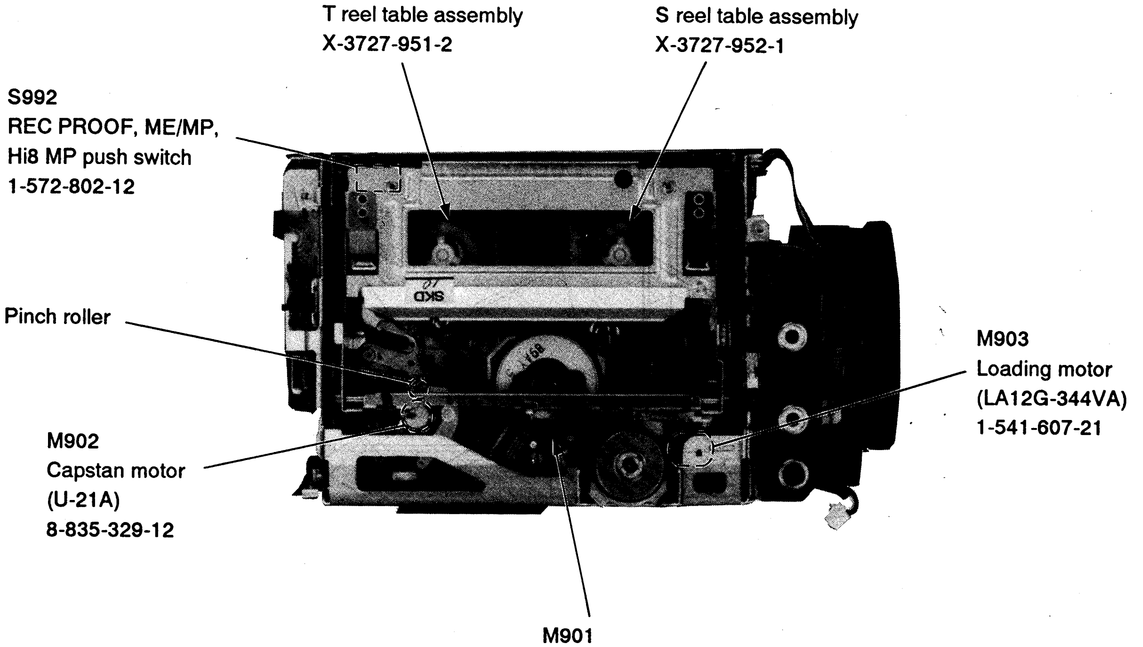
① Screw (Special M1.4×1.6)

③ Screw (Special M1.4×1.6)

⑥ LS frame (L)

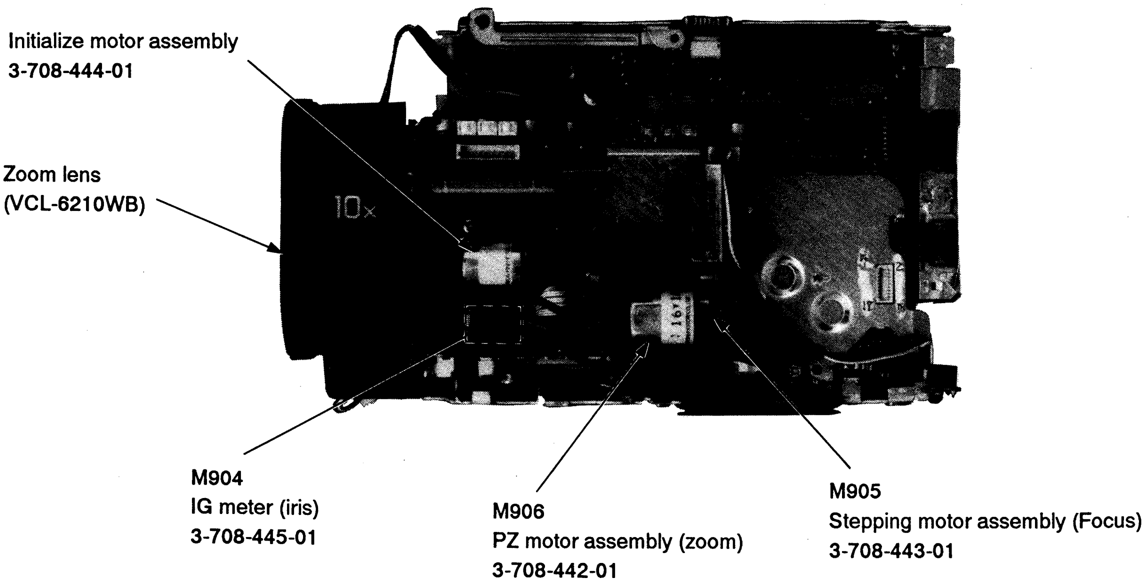
2-13. INTERNAL VIEWS

— Left Side —


T reel table assembly
X-3727-951-2
S reel table assembly
X-3727-952-1
S992
REC PROOF, ME/MP,
Hi8 MP push switch
1-572-802-12
Pinch roller
M903
Loading motor
(LA12G-344VA)
1-541-607-21
M902
Capstan motor
(U-21A)
8-835-329-12
M901

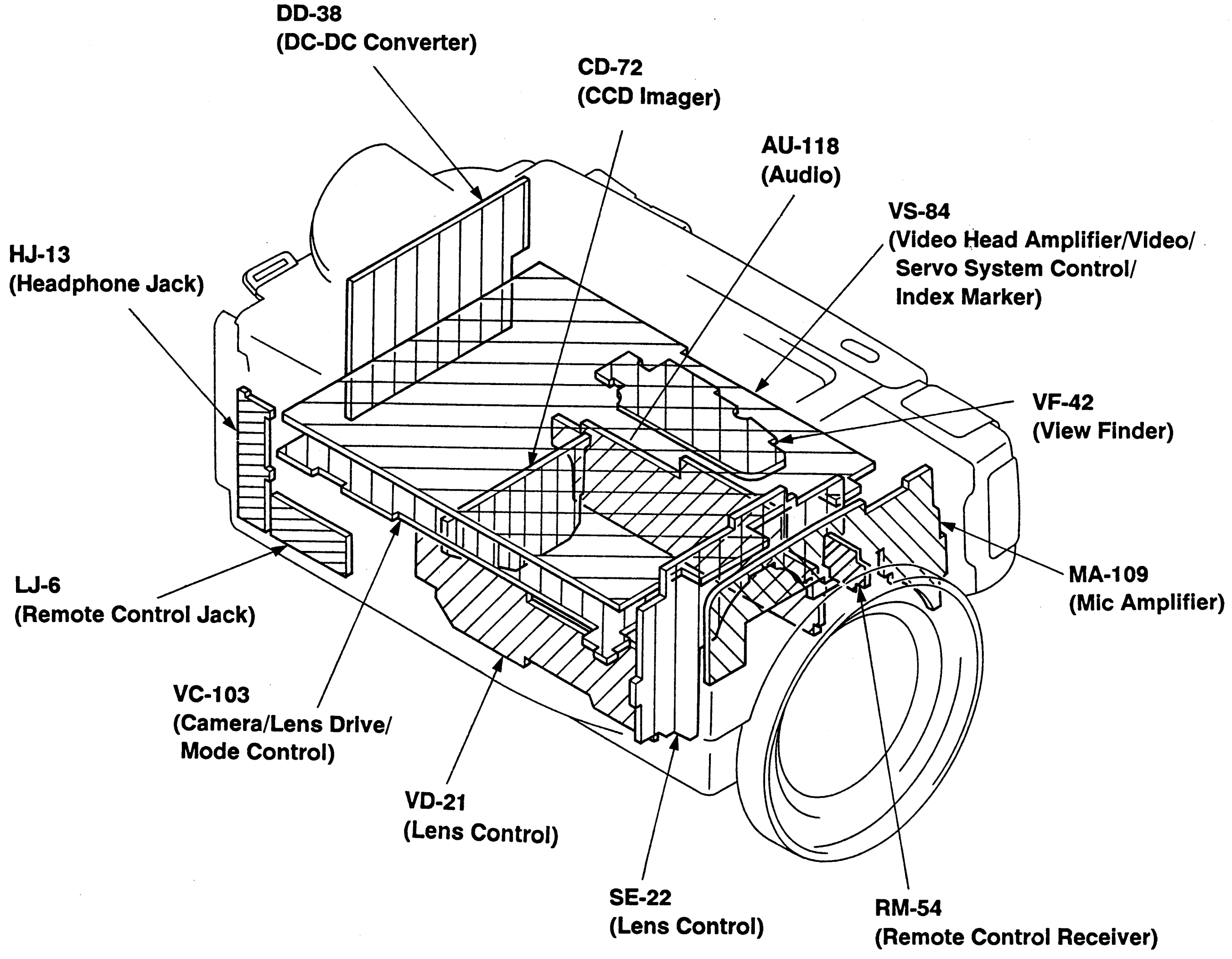
Drum Assembly	A-7048-559-A (DGH-89A-R)
Upper Rotary Drum Assembly	A-7049-495-A (DGR-89-R-(1)) (Color mark:Green, Green/Red, Black, Black/Red)
	A-7049-498-A (DGR-89-R-(2)) (Color mark:Red, Red/Red, Blue, Blue/Red)

— Right Side —


Initialize motor assembly
3-708-444-01
Zoom lens
(VCL-6210WB)
10x
M904
IG meter (iris)
3-708-445-01
M906
PZ motor assembly (zoom)
3-708-442-01
M905
Stepping motor assembly (Focus)
3-708-443-01

SECTION 3
DIAGRAMS

3-1. CIRCUIT BOARD LOCATION


DD-38
(DC-DC Converter)
CD-72
(CCD Imager)
AU-118
(Audio)
VS-84
(Video Head Amplifier/Video/
Servo System Control/
Index Marker)
HJ-13
(Headphone Jack)
VF-42
(View Finder)
MA-109
(Mic Amplifier)
LJ-6
(Remote Control Jack)
VC-103
(Camera/Lens Drive/
Mode Control)
VD-21
(Lens Control)
SE-22
(Lens Control)
RM-54
(Remote Control Receiver)

3-2. OVERALL BLOCK DIAGRAM

(See Page 117)
CD-72 BOARD
IC301
CCD IMAGER
CCD OUT
(See Page 101, 106, 109)
VC-103 BOARD (1/2)
IC805
SIGNAL SEPARATION AGC
IC802
IC803
A/D CONV
IC708
CAMERA CORE (DIGITAL CAMERA PROCESS)
IC804
V DRIVE
IC801
TIMING GENERATOR
IC707
TITLE MEMORY
TITLER
IC709
IC705
EVR
IC706
OPB
IC702
CAMERA CONTROL
IC853
IC852
IC856
IC854
IC851
IC703
IC855
IC710
SYNC GENERATOR
ZOOM LENS
IRIS METER
ZOOM POSITION
HALL
FOCUS MOTOR
ZOOM MOTOR
(See Page 111)
CS BOARD
VD-21 BOARD
(See Page 122)
IC007
IC001
IC004
IC005
IC006
VAP DRIVE
VM LOCK DRIVE
VAP CONTROL
IC101
IC104
YAW SENSOR
PITCH SENSOR
SE-22 BOARD
(See Page 121)
VS-84 BOARD (See Page 129, 133, 135, 140, 143, 147)
IC151
LOADING MOTOR DRIVE
IC153
MECHA CONTROL / SERVO
FP-423 BOARD
(See Page 151)
IC152
DEW DETECT
TAPE TOP DETECT
T REEL FG AMP
S REEL FG AMP
TAPE END DETECT
IC152
WAVE SHAPER
IC154
DRUM MOTOR DRIVE
IC156
CAPSTAN MOTOR DRIVE
WAVE SHAPER
(See Page 177)
DD-38 BOARD
IC232 (1/2)
DRUM PWM DRIVE
CAPSTAN PWM DRIVE
IC154
LPF
MECHA CONTROL
SERVO
IC157
ATF SERVO
PB SP/LP DET
CLOG DET
MD FL-MECHA (See Page 140)
FLYING ERASE
CH1 A
CH2 A
CH1 B
CH2 B
IC001
REC/PB AMP
FLYING ERASE OSC
IC301
IC303
S VIDEO I/O
IC401-IC403
IC551
IC552
Y PROCESS
IC501-IC503
C PROCESS
IC071-IC073
PB RF PROCESS HiB DETECT
IC304-IC306
EVR
IC261
IC262
INDEX MARKER
JACK ASSY
(See Page 141)
S VIDEO
VIDEO
RFU DC OUT
AUDIO
(See Page 166)
MA-109 BOARD
IC901
IC902
STEREO ZOOM MIC AMP
BUILT-IN MIC
FADER
AU-118 BOARD (See Page 163)
IC601
IC603
AFM AUDIO PROCESS
HJ-13 BOARD
(See Page 165)
PHONES
(See Page 112)
VC-103 BOARD (1/2)
IC926
SIRCS CONTROL
IC924
IC927
CHARACTER GENERATOR
MODE CONTROL (MASTER)
IC922
BACK UP VDD SWITCH
IC925
LANC I/O
(See Page 154)
RM-54 BOARD
REMOTE CONTROL RECEIVER
IC401
(See Page 153)
FK-51 BOARD
ZOOM SWITCH
POWER VTR FUNCTION SWITCH
LCD UNIT
(See Page 157)
(See Page 157)
CF-29 BOARD
CAMERA,VTR FUNCTION SWITCH
(See Page 157)
LITHIUM BATTERY
LJ-6 BOARD
(See Page 157)
(See Page 177)
DD-38 BOARD (1/2)
IC231
IC232
(1/2)
CAMERA DC/DC CONVERTER
VTR DC/DC CONVERTER
MAIN BATTERY
VF-42 BOARD
(See Page 173)
H OUT
CRT DRIVE
IC501

3-3. CAMERA (1) BLOCK DIAGRAM

VC-103 BOARD
(See Page 101, 106, 109)
(See Page 117)
CD-72 BOARD
IC901
CCD IMAGER
Q303
BUFFER
V SUB REG
23V RECT
CN301
CN801
IC804
V DRIVE
IC801
TIMING GENERATOR
IC805
SIGNAL SEPARATION
AGC/IRIS CONTROL
SAMPL HOLD
AGC
CLAMP
LPF
BLANKING
COMP
SLICE
MODE SWITCH
IC803
A/D BIAS AMP
BUFFER
CLAMP
DRIVE
IC802
A/D CONVERTER
IC708
CAMERA CORE
(DIGITAL CAMERA PROCESS)
1H DELAY
TRAP
DL
HORIZONTAL APERTURE COMPENSATOR
BPF
GAIN SELECT
VERTICAL APERTURE COMPENSATOR
CORING
ROM
INTER FACE
R MATRIX B MATRIX
G+Gb WHITE BALANCE
R, B WHITE BALANCE
CHROMA GAMMA
GAMMA ROM
EFECT
BURST BLK ADD
ENCODER
PAL MOSC
Y GAMMA
SOLAR
FADER OUT LEVEL
FADER
SET UP
WHITE CLIP
SYNC BLK CHARACTER MIX
BUFFER
VIDEO (1)
IC705
D/A CONVERTER
IC703
FOCUS PRE DRIVER
IC851
FOCUS RING SENSOR PHASE DETECT
IC702
CAMERA CONTROL
IC701
EEP ROM
NON VOLATILE MEMORY
IC706
IC710
SYNC GENERATOR
IC711
SYNC GENERATOR
IC709
TITLER
IC707
TITLE MEMORY
64K S RAM
SYSCON
POWER
FOR CHECK

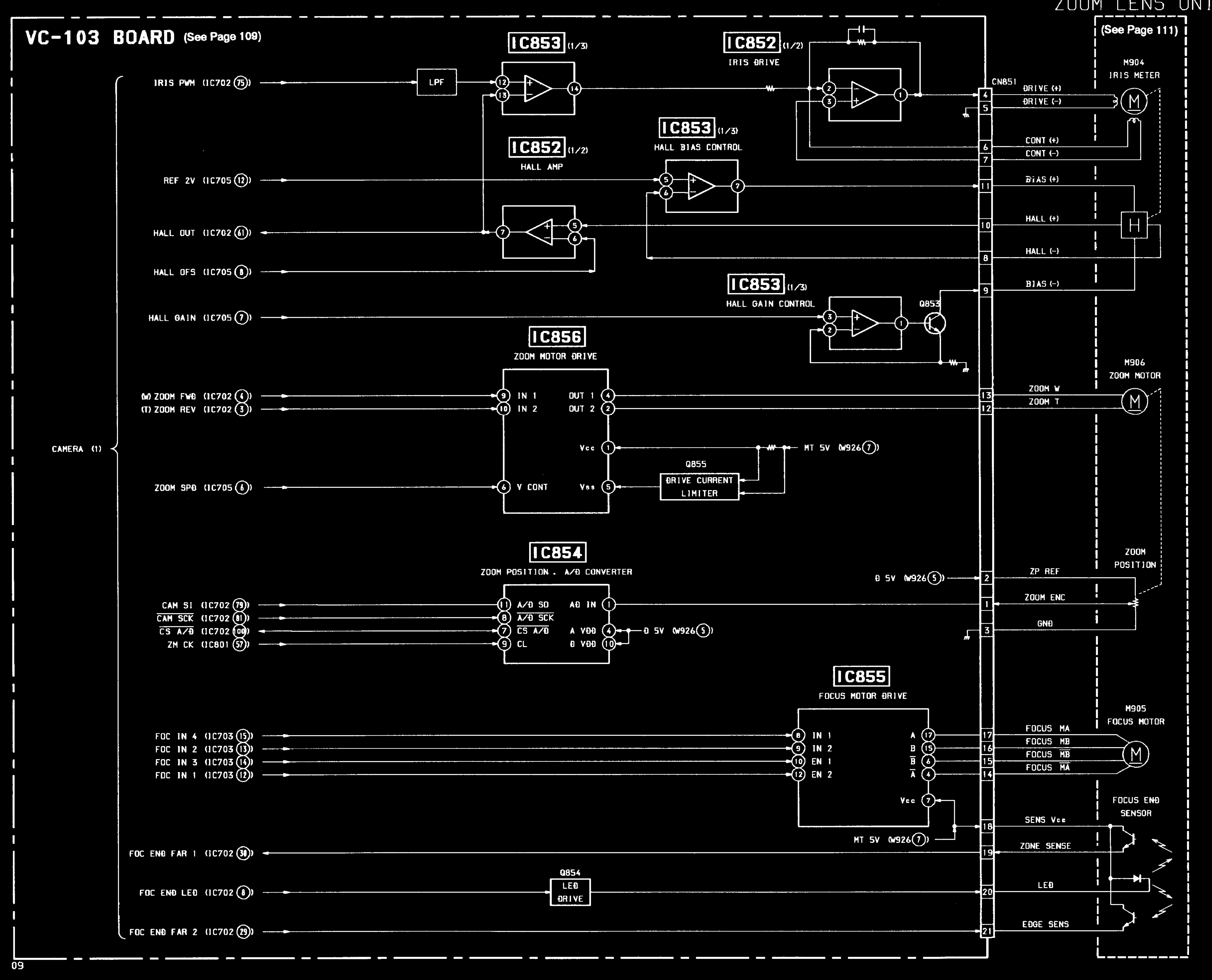
3-4. CAMERA MICROPROCESSOR PIN FUNCTION (IC702 ON VC-103 BOARD: CXP80624-267Q/273Q/275Q)

Pin No.	Signal	I/O	Function
1	EPROM DI	O	Not used.
2	EPROM SCK	O	
3	ZOOM M REV	O	Zoom motor control signal. Normally "H". 16.6 msec period PWM signal when rotating to WIDE.
4	ZOOM M FWD	O	Zoom motor control signal. Normally "H". 16.6 msec period PWM signal when rotating to TELE.
5	PB1		Not used.
6	PB0		
7	MF LED	O	ON/OFF signal of LED for focus ring rotation detection. "L": Manual focus. "H": Auto-focus.
8	FOC END LED	O	ON/OFF signal for focus end detection. Instantaneously "H" when camera power supply is turned on. Normally "L".
9	$\overline{\text{VAP RESET}}$	O	VAP microprocessor (IC002 on VD-21 board) reset signal. Normally "H".
10	CORE RESET	O	Camera core (IC708 on VC-103 board) reset signal. Normally "H". "L" when reset.
11	PDR RESET	O	Focus predriver (IC703 on VC-103 board) reset signal. Normally "H". "L" when reset.
12			Not used.
13	TG SYBY 0		
14	OPD RESET	O	OPD (IC706 on VC-103 board) reset signal. "H": camera mode. "L": VTR mode.
15	PJ7/FSEL31		Not used.
16	PJ6/FSEL30		
17	PJ5/FSEL21		
18	PJ4/FSEL20		
19	PJ3/FSEL11		
20	PJ2/FSEL10		
21	PJ1/FSEL01		
22	PJ0/FSEL00		
23	EPROM DO		Connected to +5V.
24	EPROM BUSY	I	BUSY signal from EEPROM (IC701 on VC-103 board). Normally "H". "L" pulse when data reading/writing.
25			Not used.
26			
27	PD3/C		Connected to +5V.
28	MF DIR	I	Signal indicating focus ring rotation direction. "H" when rotated towards WIDE side. "L" when rotated towards TELE side.
29	FOC END FAR 2	I	Focus end FAR 2 sensor input. Normally "L". Instantaneously "H" when camera power supply is turned on.
30	FOC END FAR 1	I	Focus end FAR sensor input. Normally "L". Instantaneously "H" when camera power supply is turned on.
31	$\overline{\text{CAM ON}}$	O	Not used.
32	PH6		
33	PH5		
34	PH4		
35	PH3		
36	PH2		
37	PH1		
38	FOC END LED	O	
39	MP		Connected to GND.
40	$\overline{\text{CAM RESET}}$	I	Reset signal input. Normally "H". "L" when reset.
41	VSS		GND
42	XTAL	O	10 MHz clock oscillation circuit.
43	EXTAL	I	

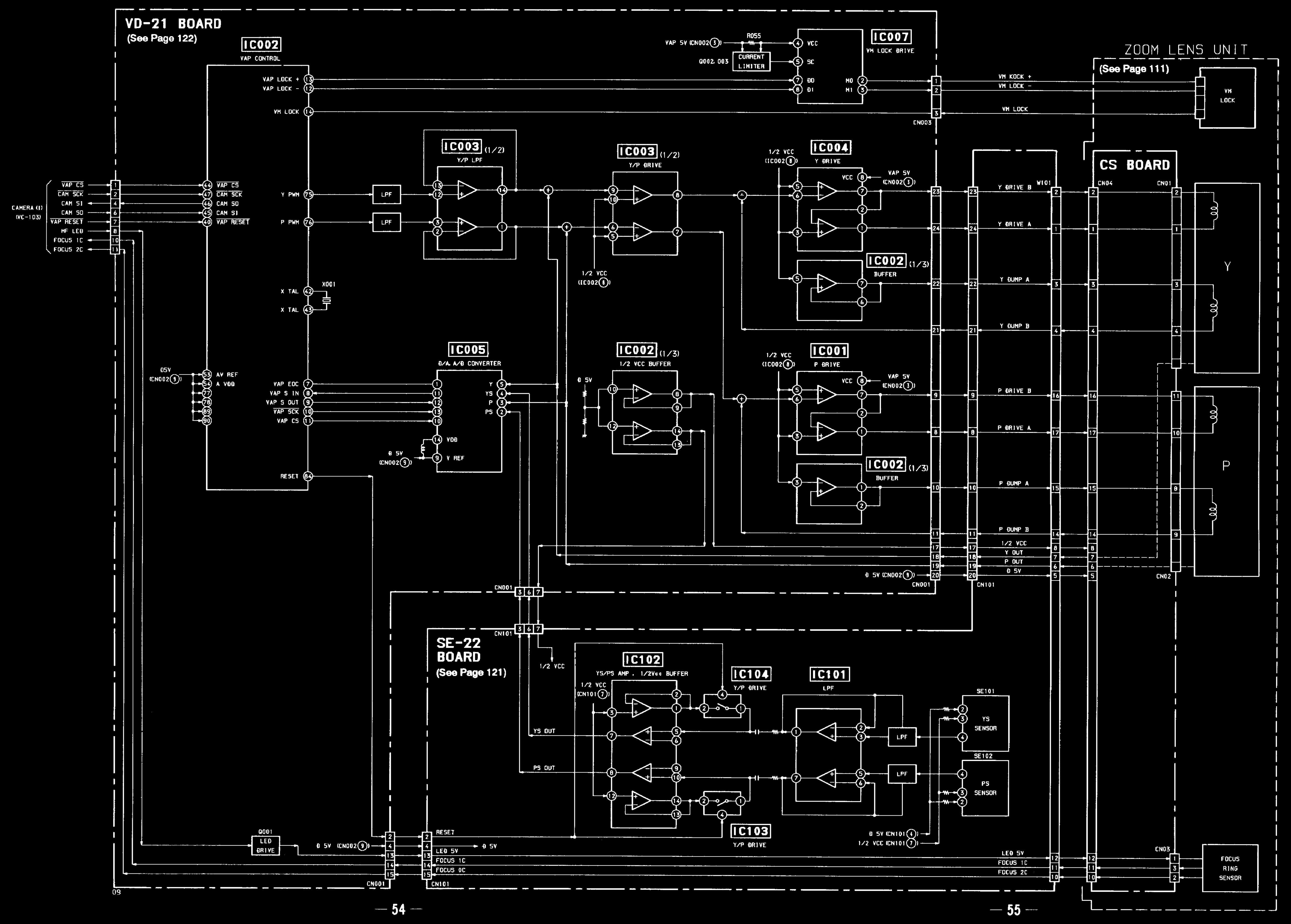
Pin No.	Signal	I/O	Function
44	$\overline{\text{CS CAM}}$	I	Chip select signal from system control microprocessor.
45	VTR SI	I	Serial data input from system control microprocessor.
46	VTR SO	O	Serial data output to system control microprocessor.
47	$\overline{\text{VTR SCK}}$	I	Serial data transfer clock.
48	PF7/AN11		Not used.
49	PF6/AN10		
50	PF5/AN9		
51	PF4		
52	AVSS		GND
53	AVREF		Analog input port reference voltage (5V).
54	AVDD		Analog input port power supply (5V).
55	PF3/AN7		Connected to GND.
56	PF2/AN6		
57	MAN FOCUS (2)	I	
58	MAN FOCUS (1)	I	
59	ZOOM SW	I	Zoom key input. 4.8V: F. TELE, 3.6V and 0V: F. WIDE, 1.2V and 2.3V: no input.
60	ZOOM POS X4	I	Connected to GND.
61	HALL A/D	I	Hall voltage. approx. 1V (iris open) to approx. 3V (iris close).
62	ZOOM POSITION A/D	I	Connected to GND.
63	PG7/EX11		Connected to +5V.
64	PB V	I	V SYNC from mechanism control microprocessor (IC153 on VS-84 board).
65	PG5/SYNC1		Not used.
66	VTR SYNC		
67	PB CTL		
68	DPG		
69	FOC FG		
70	AF BUSY	I	AF busy signal from OPD IC (IC706 on VC-103 board).
71	PE7/DAB1		Not used.
72	PE6/DAB0		
73	PE5/DAA1		
74	PE4/DAA0		
75	IRIS PWM	O	Iris control signal. 25.5 μsec period PWM signal.
76	ZP PWM	O	Not used.
77	FOCUS PULSE	I	Signal indicating focus ring rotation. Normally "L". "H" pulse when focus ring is rotated.
78	VD	I	Connected to +5V.
79	CAM SI	I	Serial data input.
80	CAM SO	O	Serial data output.
81	$\overline{\text{CAM SCK}}$	O	Serial data transfer clock.
82	AJST	I	Timing pulse input for adjusting from SYNC generator (IC710 on VC-103 board). Normally "H".
83	PI/TO		Not used.
84	PI/PWM		
85	PI/PO		
86	PI O		Connected to +5V.
87	PKO		
88	GND		GND
89	VDD		+5V power supply
90	VPP		
91	$\overline{\text{CS VAP}}$	O	Chip select signal to VAP microprocessor (IC002 on VD-21 board).
92	$\overline{\text{CS PDR}}$	O	Chip select signal to focus predriver (IC703 on VC-103 board).

Pin No.	Signal	I/O	Function
93	$\overline{\text{CS CAM D/A}}$	O	Chip select signal to camera EVR (IC705 on VC-103 board).
94	CS ROM	O	Chip select signal to EEPROM (IC701 on VC-103 board).
95	$\overline{\text{CS OPD}}$	O	Chip select signal to OPD (IC706 on VC-103 board).
96	$\overline{\text{NTSC}}$	O	NTSC: "L", PAL: "H".
97	$\overline{\text{CS CORE}}$	O	Chip select signal to camera core (IC708 on VC-103 board).
98	$\overline{\text{CS TG}}$	O	Chip select signal to timing generator (IC801 on VC-103 board).
99	J STB		Not used.
100	$\overline{\text{CS A/D}}$	O	Chip select signal to zoom position A/D converter (IC854 on VC-103 board).

3-5. CAMERA (2) BLOCK DIAGRAM


VC-103 BOARD (See Page 109)
ZOOM LENS UNIT
(See Page 111)
CAMERA (1)
IRIS PWM (IC702 ⑺⑸)
REF 2V (IC705 ⑿)
HALL OUT (IC702 ⑹⑴)
HALL OFS (IC705 ⑧)
HALL GAIN (IC705 ⑦)
(W) ZOOM FWD (IC702 ④)
(T) ZOOM REV (IC702 ③)
ZOOM SPD (IC705 ⑥)
CAM SI (IC702 ⑺⑼)
CAM SCK (IC702 ⑻⑴)
CS A/D (IC702 ⑽⑽)
ZM CK (IC801 ⑸⑺)
FOC IN 4 (IC703 ⒂)
FOC IN 2 (IC703 ⒀)
FOC IN 3 (IC703 ⒁)
FOC IN 1 (IC703 ⑿)
FOC END FAR 1 (IC702 ⑶⑽)
FOC END LED (IC702 ⑧)
FOC END FAR 2 (IC702 ⑵⑼)
LPF
IC853 (1/3)
IC852 (1/2)
IRIS DRIVE
IC852 (1/2)
HALL AMP
IC853 (1/3)
HALL BIAS CONTROL
IC853 (1/3)
HALL GAIN CONTROL
Q853
IC856
ZOOM MOTOR DRIVE
IN 1
IN 2
OUT 1
OUT 2
Vcc
V CONT
Vss
Q855
DRIVE CURRENT LIMITER
MT 5V (W926⑦)
IC854
ZOOM POSITION . A/D CONVERTER
A/D SO
A/D SCK
CS A/D
CL
AD IN
A VDD
D VDD
D 5V (W926⑤)
IC855
FOCUS MOTOR DRIVE
IN 1
IN 2
EN 1
EN 2
A
B
B̄
Ā
Vcc
Q854
LED DRIVE
CN851
DRIVE (+)
DRIVE (−)
CONT (+)
CONT (−)
BIAS (+)
HALL (+)
HALL (−)
BIAS (−)
ZOOM W
ZOOM T
ZP REF
ZOOM ENC
GND
FOCUS MA
FOCUS MB
FOCUS M̄B
FOCUS M̄A
SENS Vcc
ZONE SENSE
LED
EDGE SENS
M904
IRIS METER
H
M906
ZOOM MOTOR
ZOOM POSITION
M905
FOCUS MOTOR
FOCUS END SENSOR
09

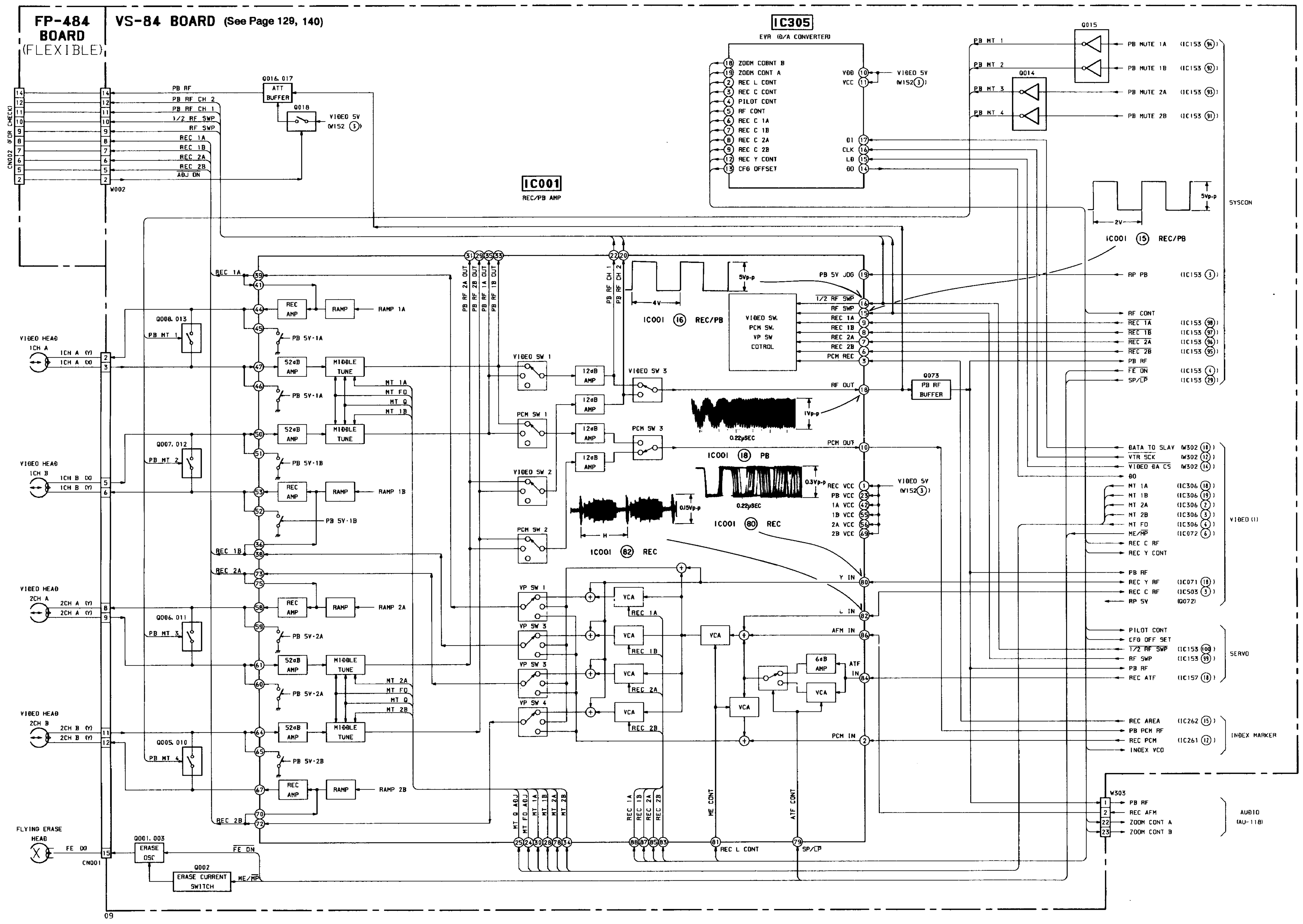
3-6. CAMERA (3) BLOCK DIAGRAM


VD-21 BOARD
(See Page 122)
ZOOM LENS UNIT
(See Page 111)
CAMERA (1) (VC-103)
VAP CS
CAM SCK
CAM SI
CAM SO
VAP RESET
MF LED
FOCUS 1C
FOCUS 2C
IC002
VAP CONTROL
VAP LOCK +
VAP LOCK −
VM LOCK
Y PWM
P PWM
X TAL
X001
AV REF
A VDD
D5V (CN002⑨)
VAP EOC
VAP S IN
VAP S OUT
VAP SCK
VAP CS
RESET
LPF
IC003 (1/2)
Y/P LPF
IC003 (1/2)
Y/P DRIVE
1/2 VCC (IC002⑧)
IC005
D/A, A/D CONVERTER
VDD
V REF
D 5V (CN002⑨)
IC002 (1/3)
1/2 VCC BUFFER
D 5V
VAP 5V (CN002③)
R055
Q002, 003
CURRENT LIMITER
IC007
VM LOCK DRIVE
VCC
SC
D0
D1
M0
M1
CN003
VM KOCK +
VM LOCK −
VM LOCK
VM LOCK
IC004
Y DRIVE
IC002 (1/3)
BUFFER
IC001
P DRIVE
IC002 (1/3)
BUFFER
CN001
CN101
W101
Y DRIVE B
Y DRIVE A
Y DUMP A
Y DUMP B
P DRIVE B
P DRIVE A
P DUMP A
P DUMP B
1/2 VCC
Y OUT
P OUT
D 5V
CS BOARD
CN04
CN01
CN02
CN03
Y
P
SE-22 BOARD
(See Page 121)
IC102
YS/PS AMP . 1/2Vcc BUFFER
1/2 VCC (CN101⑦)
IC104
Y/P DRIVE
IC101
LPF
IC103
Y/P DRIVE
SE101
YS SENSOR
SE102
PS SENSOR
YS OUT
PS OUT
D 5V (CN101④)
1/2 VCC (CN101⑦)
Q001
LED DRIVE
D 5V (CN002⑨)
RESET
LED 5V
FOCUS 1C
FOCUS 0C
FOCUS 2C
FOCUS RING SENSOR
09

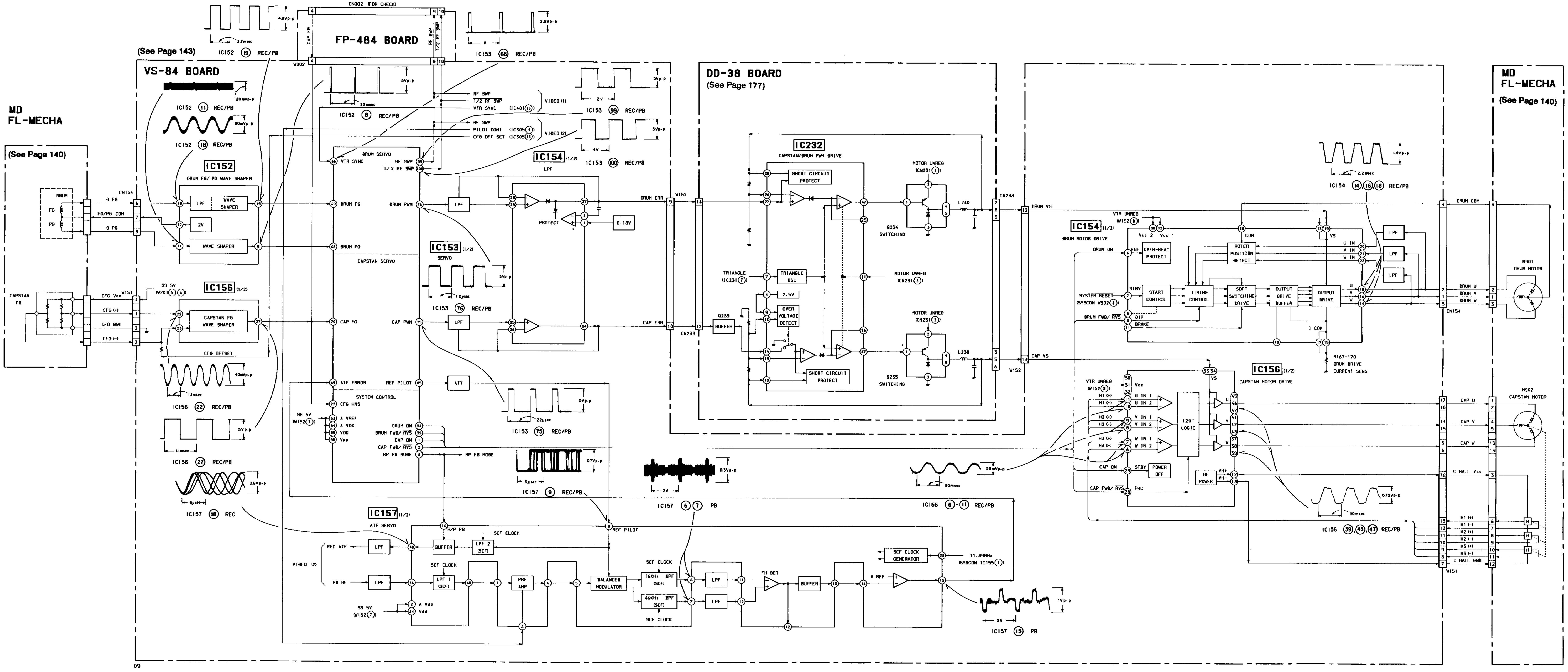
3-7. VIDEO (1) BLOCK DIAGRAM

VS-84 BOARD (See Page 129, 133, 135, 140, 143, 147)
(See Page 141)
JACK ASSY
IC071
IC401
IC402
IC403
IC501
IC503
IC522
IC551
IC301
IC303
IC304
IC306
IC072
MAIN-EMPHASIS
SUB-EMPHASIS
NOISE CANSEL
Y COMB FILTER
COMB FILTER
Y/C MIX

3-8. VIDEO (2) BLOCK DIAGRAM


FP-484 BOARD (FLEXIBLE)
VS-84 BOARD (See Page 129, 140)
CN002 (FOR CHECK)
W002
PB RF
PB RF CH 2
PB RF CH 1
1/2 RF SWP
RF SWP
REC 1A
REC 1B
REC 2A
REC 2B
ADJ ON
Q016, 017
ATT BUFFER
Q018
VIDEO 5V (W152 ③)
IC305
EVR (D/A CONVERTER)
ZOOM COBNT B
ZOOM CONT A
REC L CONT
REC C CONT
PILOT CONT
RF CONT
REC C 1A
REC C 1B
REC C 2A
REC C 2B
REC Y CONT
CFG OFFSET
VDD
VCC
DI
CLK
LD
DO
IC001
REC/PB AMP
Q015
Q014
PB MT 1
PB MT 2
PB MT 3
PB MT 4
PB MUTE 1A (IC153 (94))
PB MUTE 1B (IC153 (92))
PB MUTE 2A (IC153 (93))
PB MUTE 2B (IC153 (91))
5Vp-p
2V
IC001 ⑮ REC/PB
SYSCON
RP PB (IC153 ③)
RF CONT
REC 1A (IC153 (98))
REC 1B (IC153 (97))
REC 2A (IC153 (96))
REC 2B (IC153 (95))
PB RF
FE ON (IC153 ④)
SP/LP (IC153 (29))
DATA TO SLAV (W302 ⑩)
VTR SCK (W302 ⑫)
VIDEO DA CS (W302 ⑭)
DO
MT 1A (IC306 ⑱)
MT 1B (IC306 ⑲)
MT 2A (IC306 ②)
MT 2B (IC306 ③)
MT FO (IC306 ④)
ME/MP (IC072 ⑥)
REC C RF
REC Y CONT
VIDEO (1)
PB RF
REC Y RF (IC071 ⑱)
REC C RF (IC503 ③)
RP 5V (Q072)
PILOT CONT
CFG OFF SET
1/2 RF SWP (IC153 (100))
RF SWP (IC153 (99))
PB RF
REC ATF (IC157 ⑱)
SERVO
REC AREA (IC262 ⑮)
PB PCM RF
REC PCM (IC261 ⑫)
INDEX VCO
INDEX MARKER
W303
PB RF
REC AFM
ZOOM CONT A
ZOOM CONT B
AUDIO (AU-118)
VIDEO HEAD 1CH A
1CH A (Y)
1CH A (X)
VIDEO HEAD 1CH B
1CH B (X)
1CH B (Y)
VIDEO HEAD 2CH A
2CH A (Y)
2CH A (Y)
VIDEO HEAD 2CH B
2CH B (Y)
2CH B (Y)
FLYING ERASE HEAD
FE (X)
CN001
09
Q008, 013
Q007, 012
Q006, 011
Q005, 010
Q001, 003
ERASE OSC
Q002
ERASE CURRENT SWITCH
FE ON
ME/MP
REC AMP
RAMP
RAMP 1A
RAMP 1B
RAMP 2A
RAMP 2B
52dB AMP
MIDDLE TUNE
PB 5V·1A
PB 5V·1B
PB 5V·2A
PB 5V·2B
MT 1A
MT FO
MT Q
MT 1B
MT 2A
MT 2B
PB RF 2A OUT
PB RF 2B OUT
PB RF 1A OUT
PB RF 1B OUT
PB RF CH 1
PB RF CH 2
4V
IC001 ⑯ REC/PB
VIDEO SW. PCM SW. VP SW COTROL
PB 5V JOG
1/2 RF SWP
RF SWP
PCM REC
RF OUT
VIDEO SW 1
VIDEO SW 2
VIDEO SW 3
PCM SW 1
PCM SW 2
PCM SW 3
12dB AMP
Q073
PB RF BUFFER
1Vp-p
0.22μSEC
IC001 ⑱ PB
PCM OUT
0.3Vp-p
0.22μSEC
IC001 (80) REC
REC VCC
PB VCC
1A VCC
1B VCC
2A VCC
2B VCC
VIDEO 5V (W152 ③)
0.15Vp-p
H
IC001 (82) REC
Y IN
C IN
AFM IN
ATF IN
PCM IN
VP SW 1
VP SW 3
VP SW 3
VP SW 4
VCA
6dB AMP
MT Q ADJ
MT FO ADJ
ME CONT
ATF CONT
REC L CONT
SP/LP

3-9. SERVO BLOCK DIAGRAM


FP-484 BOARD
CN002 (FOR CHECK)
W002
CAP FG
RF SWP
1/2 RF SWP
(See Page 143)
VS-84 BOARD
[redacted]
MD
FL-MECHA
(See Page 140)
DRUM
FG
PG
CN154
D FG
FG/PG COM
D PG
CAPSTAN FG
CFG Vcc
CFG (+)
CFG GND
CFG (-)
W151
IC152 ⑲ REC/PB
IC152 ⑪ REC/PB
IC152 ⑱ REC/PB
IC152
DRUM FG/PG WAVE SHAPER
LPF
WAVE SHAPER
2V
IC156 (1/2)
CAPSTAN FG WAVE SHAPER
CFG OFFSET
SS 5V
IC156 ㉒ REC/PB
IC156 ㉗ REC/PB
IC157 ⑱ REC
IC153 ⑥⑥ REC/PB
IC152 ⑧ REC/PB
VIDEO (1)
VIDEO (2)
VTR SYNC
PILOT CONT
CFO OFF SET
IC153 ⑨⑨ REC/PB
IC153 ⑩⑩ REC/PB
DRUM SERVO
VTR SYNC
DRUM FG
DRUM PG
DRUM PWM
CAPSTAN SERVO
CAP FG
CAP PWM
IC154 (1/2)
LPF
PROTECT
0.18V
IC153 (1/2)
SERVO
IC153 ⑦⑥ REC/PB
IC153 ⑦⑤ REC/PB
ATF ERROR
REF PILOT
ATT
CFG HMS
SYSTEM CONTROL
A VREF
A VDD
VDD
Vpp
DRUM ON
DRUM FWD/RVS
CAP ON
CAP FWD/RVS
RP PB MODE
IC157 ⑨ REC/PB
DRUM ERR
CAP ERR
W152
DD-38 BOARD
(See Page 177)
IC232
CAPSTAN/DRUM PWM DRIVE
SHORT CIRCUIT PROTECT
TRIANGLE (IC231 ⑦)
TRIANGLE OSC
2.5V
OVER VOLTAGE DETECT
Q239 BUFFER
MOTOR UNREG (CN231 ③)
Q234 SWITCHING
Q235 SWITCHING
L240
L238
CN233
IC157 ⑥⑦ PB
DRUM VS
CAP VS
IC154 (1/2)
DRUM MOTOR DRIVE
VTR UNREG (W152 ⑧)
DRUM ON
OVER-HEAT PROTECT
SYSTEM RESET (SYSCON W302 ④)
DRUM FWD/RVS
START CONTROL
TIMING CONTROL
ROTER POSITION DETECT
SOFT SWITCHING DRIVE
OUTPUT DRIVE BUFFER
OUTPUT DRIVE
DIR
BRAKE
COM
U IN
V IN
W IN
R167-170 DRUM DRIVE CURRENT SENS
IC154 ⑭,⑯,⑱ REC/PB
DRUM COM
DRUM U
DRUM V
DRUM W
M901 DRUM MOTOR
IC156 (1/2)
CAPSTAN MOTOR DRIVE
H1 (+)
H1 (-)
H2 (+)
H2 (-)
H3 (+)
H3 (-)
120° LOGIC
CAP ON
STBY
POWER OFF
HE POWER
CAP FWD/RVS
FRC
IC156 ⑥-⑪ REC/PB
IC156 ㊴,㊸,㊼ REC/PB
CAP U
CAP V
CAP W
C HALL Vcc
C HALL GND
M902 CAPSTAN MOTOR
IC157 (1/2)
ATF SERVO
REC ATF
PB RF
R/P PB
BUFFER
SCF CLOCK
LPF 2 (SCF)
LPF 1 (SCF)
PRE AMP
BALANCED MODULATOR
16KHz BPF (SCF)
46KHz BPF (SCF)
FH DET
V REF
SCF CLOCK GENERATOR
11.89MHz (SYSCON IC155 ④)
IC157 ⑮ PB
09

3-10. SYSTEM CONTROL BLOCK DIAGRAM

LCD UNIT
(See Page 157)
CF-29 BOARD (See Page 157)
(See Page 157)
LJ-6 BOARD
LITHIUM BATTERY
(See Page 157)
(See Page 154)
RM-54 BOARD
IC401
VC-103 BOARD (See Page 112)
IC924
MODE CONTROL
IC923
EEP ROM
IC927
CHARACTER GENERATOR
IC921
IC922
IC925
LANC I/O
IC926
SIRCS CONTROL
VS-84 BOARD (See Page 143)
IC153
MECHA CONTROL
IC155
IC151
LOADING MOTOR DRIVE
IC152
IC157
SERVO
(See Page 166)
MA-109 BOARD
FP-484 BOARD
(FLEXIBLE)
FK-51 BOARD (See Page 153)
(See Page 140)
MD FL-MECHA
FP-423 BOARD
(See Page 151)

3-11. SYSTEM (MECHANISM) CONTROL MICROPROCESSOR PIN FUNCTION (IC153 ON VS-84 BOARD: CXP80624-263Q/266Q)

<table>
<tr><th>Pin No.</th><th>Signal</th><th>I/O</th><th>Function</th></tr>
<tr><td>1</td><td>CAP ON</td><td>O</td><td>Capstan driver ON/OFF control signal. “H” when capstan ON.</td></tr>
<tr><td>2</td><td>CAP FWD/RVS</td><td>O</td><td>Capstan rotating direction control signal. “H”: FWD, “L”:RVS.</td></tr>
<tr><td>3</td><td>RP PB MODE</td><td>O</td><td>REC/PB select signal of REC/PB amplifier (IC001 on VC-84 board) and ATF servo IC (IC157 on VC-84 board). “H”: PB.</td></tr>
<tr><td>4</td><td>FE ON</td><td>O</td><td>Flying erase oscillation ON/OFF control signal. “L”: oscillation.</td></tr>
<tr><td>5</td><td>JOG VD</td><td>O</td><td>False VD signal to be inserted into playback video signal during variable speed playback.</td></tr>
<tr><td>6</td><td>JOG</td><td>O</td><td>Variable speed/normal speed playback select signal of video circuit. “H” when variable speed playback.</td></tr>
<tr><td>7</td><td>MIC MONO</td><td>I</td><td>External microphone monaural/stereo discrimination input. “L”: When monaural microphone is used.</td></tr>
<tr><td>8</td><td>PB 1.7M DET</td><td>I</td><td>AFM stereo tape/monaural tape discrimination input. “H”: When stereo or bilingual tape is played back.</td></tr>
<tr><td>9</td><td>J MONO</td><td>I</td><td>Audio input/output terminal monaural/stereo discrimination input. “L”: When jack is inserted in right channel terminal.</td></tr>
<tr><td>10</td><td>INT VD</td><td>O</td><td>Internal VD signal.</td></tr>
<tr><td>11</td><td>PBV</td><td>O</td><td>V sync as reference to character generator, communication and LANC period.
Lock to CAM VD (Pin (64)) when CAM. Lock to VTR sync (Pin (66)) when VTR.</td></tr>
<tr><td>12</td><td>NC</td><td></td><td rowspan="3">Not used (Open).</td></tr>
<tr><td>13</td><td>NC</td><td></td></tr>
<tr><td>14</td><td>NC</td><td></td></tr>
<tr><td>15</td><td>MSW C</td><td>I</td><td rowspan="3">MODE switch input.
<table>
<tr><th></th><th>EJECT</th><th>USE</th><th>LS</th><th>GL</th><th>REC/PB</th><th>READY</th></tr>
<tr><td>MSW A</td><td>L</td><td>H</td><td>L</td><td>L</td><td>H</td><td>H</td></tr>
<tr><td>MSW B</td><td>L</td><td>H</td><td>H</td><td>H</td><td>L</td><td>L</td></tr>
<tr><td>MSW C</td><td>H</td><td>L</td><td>H</td><td>L</td><td>H</td><td>L</td></tr>
</table></td></tr>
<tr><td>16</td><td>MSW B</td><td>I</td></tr>
<tr><td>17</td><td>MSW A</td><td>I</td></tr>
<tr><td>18</td><td>NC</td><td></td><td>Not used (open).</td></tr>
<tr><td>19</td><td>REC PROOF SW</td><td>I</td><td>Erasure protection switch input. “L” when REC prohibit.</td></tr>
<tr><td>20</td><td>ME/MP SW</td><td>I</td><td>ME/MP switch input. “L”: MP, “H”: ME.</td></tr>
<tr><td>21</td><td>E/L DET</td><td>I</td><td>Normal/Hi8 discrimination input. “H”: When Hi8 tape is played back.</td></tr>
<tr><td>22</td><td>VIDEO MUTE</td><td>O</td><td>Video output mute signal. “H”: mute.</td></tr>
<tr><td>23</td><td>LINE MIX</td><td>I</td><td>“H” only when Hi-Fi sound switch is at the “Stereo” (Green) position and plug is not inserted in the right audio output terminal as well during playback.</td></tr>
<tr><td>24</td><td>MX SEL 1</td><td>O</td><td rowspan="2">During REC: Monaural/stereo switching signal.
<table>
<tr><th></th><th>Monaural</th><th>Stereo</th></tr>
<tr><td>MX SEL 1</td><td>L</td><td>L</td></tr>
<tr><td>MX SEL 2</td><td>H</td><td>L</td></tr>
</table>
During Playback: Monaural/stereo/bilingual switching signal.
<table>
<tr><th></th><th>Stereo</th><th>1</th><th>2</th><th>Monaural</th></tr>
<tr><td>MX SEL 1</td><td>L</td><td>H</td><td>L</td><td>H</td></tr>
<tr><td>MX SEL 2</td><td>L</td><td>L</td><td>H</td><td>L</td></tr>
</table></td></tr>
<tr><td>25</td><td>MX SEL 2</td><td>O</td></tr>
<tr><td>26</td><td>MX ON/OFF</td><td>O</td><td>Matrix ON/OFF signal. “H”: Matrix ON (Stereo REC/PB).</td></tr>
<tr><td>27</td><td>Hi8/NORM(E/L)</td><td>O</td><td>Video circuit normal/Hi8 switching signal. “H”: Hi8 mode.</td></tr>
<tr><td>28</td><td>CAM/LINE</td><td>O</td><td>Camera input/line input select signal. “H” when camera input.</td></tr>
<tr><td>29</td><td>SP/LP</td><td>O</td><td>SP/LP switching signal. “L”: LP.</td></tr>
<tr><td>30</td><td>EDIT</td><td>O</td><td>Video circuit normal/EDIT switching signal. “L”: When “EDIT” switch is ON.</td></tr>
<tr><td>31</td><td>UNLOAD</td><td>O</td><td>Loading motor control signal. “H” or “H” pulse when unloading.</td></tr>
<tr><td>32</td><td>LOAD</td><td>O</td><td>Loading motor control signal. “H” or “H” pulse when loading.</td></tr>
<tr><td>33</td><td>LM LIM CONT</td><td>O</td><td>Loading motor limiter control signal. Temporary “H” when loading.</td></tr>
<tr><td>34</td><td>DRUM ON</td><td>O</td><td>Drum motor ON/OFF signal. “H” (approx. 1.3V) when drum ON.</td></tr>
<tr><td>35</td><td>DRUM FWD/RVS</td><td>O</td><td>Drum rotating direction control signal. Normally “H”.</td></tr>
<tr><td>36</td><td>NC</td><td></td><td rowspan="2">Not used (open).</td></tr>
<tr><td>37</td><td>NC</td><td></td></tr>
<tr><td>38</td><td>REEL HALL CONT</td><td>O</td><td>Reel FG sensor (HALL element) power supply control signal.</td></tr>
<tr><td>39</td><td>MP</td><td></td><td>Connected to GND.</td></tr>
</table>

3-12. MODE CONTROL (MASTER) MICROPROCESSOR PIN FUNCTION (IC924 ON VC-103 BOARD: μPD75316)

Pin No.	Signal	I/O	Function	
1	S12	O	LCD SEG Pin drive signal. Four value pulses of 0V, 1.6V, 3.2V and 4.8V.	
2	S13	O		
3	S14	O		
4	S15	O		
5	S16	O		
6	S17	O		
7	S18	O		
8	S19	O		
9	S20	O		
10	S21	O		
11	S22	O		
12	S23	O		
13	EEPROM CS	O	Chip select signal to EEPROM (IC923 on VC-103 board).	
14	MK CS	O	Chip select signal to data code controller (IC262 on VS-84 board).	
15	TG STBY	O	Controls 4fsc timing generator (IC801 on VC-103 board) when VTR mode. Normally "L".	
16	IN/OUT	O	Video, audio input/output switching signal.	
17	TITLE CS	O	Chip select signal to titler (IC707 on VC-103 board).	
18	REMO CS	O	Chip select signal to SIRCS (infrared remote control) controller (IC926 on VC-103 board).	
19	SRAM CS	O	Chip select signal to SRAM (title memory: IC707 on VC-103 board).	
20	CAM CS	O	Chip select signal to camera microprocessor (IC708 on VC-103 board).	
21	COM0	O	LCD COM Pin drive signal. Four value pulses of 0V, 1.6V, 3.2V and 4.8V.	
22	COM1	O		
23	COM2	O		
24	COM3	O		
25	BIAS	O	4.8V LCD bias terminal.	
26	VLC0	I	4.8V	LCD drive bias pin.
27	VLC1	I	3.2V	
28	VLC2	I	1.6V	
29	KEY OUT 4	O	Key matrix output. V period "L" pulse output only when corresponding key pressed. "Hiz" when other cases.	
30	KEY OUT 5	O		
31	SYSTEM RESET	O	Reset signal output of whole system. Normally "H". "L" when reset.	
32	TALLY	O	ON/OFF signal of TALLY LED. "L" when LED is lit.	
33	GND		GND	
34	KEY OUT 0	O	Key matrix output. V period "L" pulse output only when corresponding key pressed. "Hiz" when other cases.	
35	KEY OUT 1	O		
36	KEY OUT 2	O		
37	KEY OUT 3	O		
38	BATT IN	I	Main battery detection input. "L" when main battery is mounted.	
39	SCK	I	Serial data transfer clock.	
40	DATA TO SLV	O	Serial data output.	
41	DATA TO MSTR	I	Serial data input.	
42	SYSTEM SYNC	I	V SYNC from mechanism control microprocessor (IC153 on VS-84 board). Timing reference signal for communication, LANC, etc.	
43	LI PRE END	I	Lithium battery preend detection input. "L" when no lithium battery or wasted.	
44	LANC PWR ON	I	Power on signal input from wired remote control. "L": When remote control power switch is pressed.	
45	TITLE BUSY	I	Title busy signal. Normally "L".	
46	VTR DD ON	O	VTR DC-DC converter control signal. "H": When power supply switch is set to "VTR" or "Camera".	
47	CAMERA DD ON	O	CAMERA DC-DC converter control signal. "H": When power supply switch is set to "CAMERA".	

Pin No.	Signal	I/O	Function
48	$\overline{\text{VIDEO DA CS}}$	O	Chip select signal to video, audio circuit EVR (ICs 304 to 306 on VS-84 board).
49	AUTO LOCK LED	O	Auto-lock LED ON/OFF signal. "H" when LED is lit.
50	$\overline{\text{VIDEO CS}}$	O	Chip select signal to video Y signal process IC (IC401 on VS-84 board).
51	$\overline{\text{VTR COSMO CS}}$	O	Chip select signal to mechanism control microprocessor (IC153 on VS-84 board).
52	$\overline{\text{SG CS}}$	O	Chip select signal to SYNC generator (IC710 on VC-103 board).
53	CG STBY	O	Chip select signal to character generator (IC927 on VC-103 board).
54	VDD		+5V power supply.
55	XT1	I	32 kHz crystal oscillation circuit (for clock).
56	XT2		
57	NC		Connected to +5V.
58	X1	I	4.19 MHz crystal oscillation circuit (for system clock).
59	X2	I	
60	KEY IN 0	I	Key matrix input. V period "L" pulse input when corresponding key is pressed. "H" when other cases.
61	KEY IN 1	I	
62	KEY IN 2	I	
63	KEY IN 3	I	
64	KEY IN 4	I	
65	KEY IN 5	I	
66	KEY IN 6	I	
67	$\overline{\text{CC LOCK}}$	I	Cassette compartment lock switch input. "L": lock.
68	$\overline{\text{RESET}}$	I	Mode control microprocessor reset signal input. Normally "H", "L" when reset.
69	S0		LCD SEG Pin drive signal. Four value pulses of 0V, 1.6V, 3.2V and 4.8V.
70	S1		
71	S2	O	
72	S3	O	
73	S4	O	
74	S5	O	
75	S6	O	
76	S7	O	
77	S8	O	
78	S9	O	
79	S10	O	
80	S11	O	

3-13-2. System Control – Servo Block Interface (VS-84 Board)

NAME	I/O	No.	VTR MODE															CAMERA MODE					
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB-PAUSE	FRAME	SLOW	SHUTTLE EDIT *13		REC	REC PAUSE	STAND BY	REC	EDIT SEARCH		REC REVIEW	
						CUE	REVIEW		CUE	REVIEW				FWD	REV					FWD	RVS	FWD	RVS
T.REEL FG	I	IC153 (62)	–	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	–	–	*1	*1	*1	*1	*1
S.REEL FG	I	IC153 (61)	–	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	–	–	*1	*1	*1	*1	*1
ATF ERROR	I	IC153 (60)	–	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
DRUM PG	I	IC153 (68)	–	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3
DRUM FG	I	IC153 (69)	–	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
CAP FG/ CFG HMS	I	IC153 (70), (71)	–	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5
CAP ON	O	IC153 ①	L	H	H	H	H	H	H	H	L	*8	*8	*15	*15	H	L	L	H	H	H	H	H
REF PILOT	O	IC153 (65)	*7	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6
RP PB MODE	O	IC153 ③	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H
DRUM FWD/$\overline{\text{RVS}}$ *10	O	IC153 ㉟	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
CAP FWD/ $\overline{\text{RVS}}$	O	IC153 ②	L	H	L	H	L	H	H	L	L	*8	*8	H	L	H	L	L	H	H	L	H	L
DRUM PWM	O	IC153 (76)	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9
CAP PWM	O	IC153 (75)	L	*9	*9	*9	*9	*9	*9	*9	L	*9	*9	*9	*9	*9	L	L	*9	*9	*9	*9	*9
$\overline{\text{LM LIM CONT}}$ *11	O	IC153 ㉝	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
DRUM ON *12	O	IC153 ㉞	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H

*1. Pulse input amplitude modulated by reel rotation. (200 msec period when REC/PB)

*2. ATF error voltage input

*3. One PG pulse input per one drum rotation, approx. 45 Hz.

*4. Six PG pulses input per one drum rotation, approx. 270 Hz.

*5. 360 FG pulses input per one capstan rotation. Approx. 820 Hz when REC/PB (SP).

*6. Four frequencies output synchronized with drum rotation. f1=102.54 kHz, f2=118.95 kHz, f3=165.21 kHz and f4=148.69 kHz

*7. f2 (118.95 kHz) output

*8. "H" pulse when tape run.

*9. 21.5 μsec period PWM signal

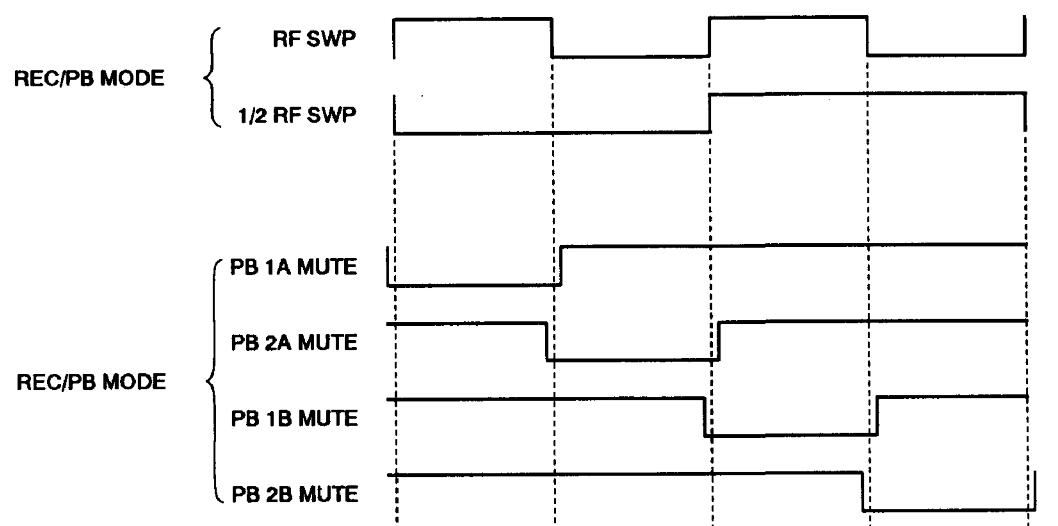
*10. Normally "H". Temporary "L" only when load/unload (drum reverse rotation).

*11. Temporary "H" only when cassette loading (finger catch protection).

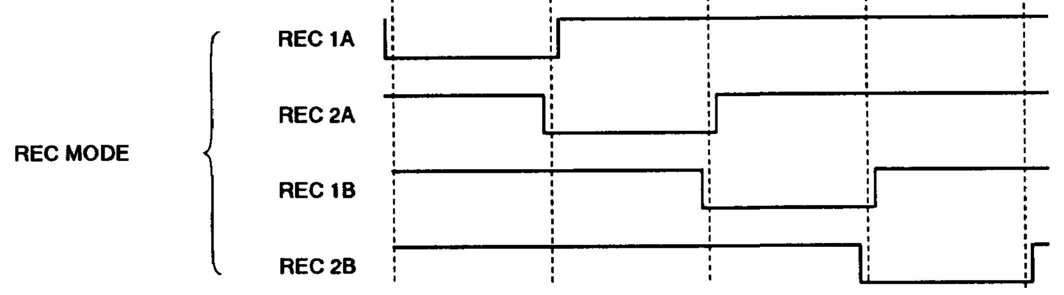
*12. "H": approx. 1.3 Vdc

*13. Edit search pressed when playback interruption.

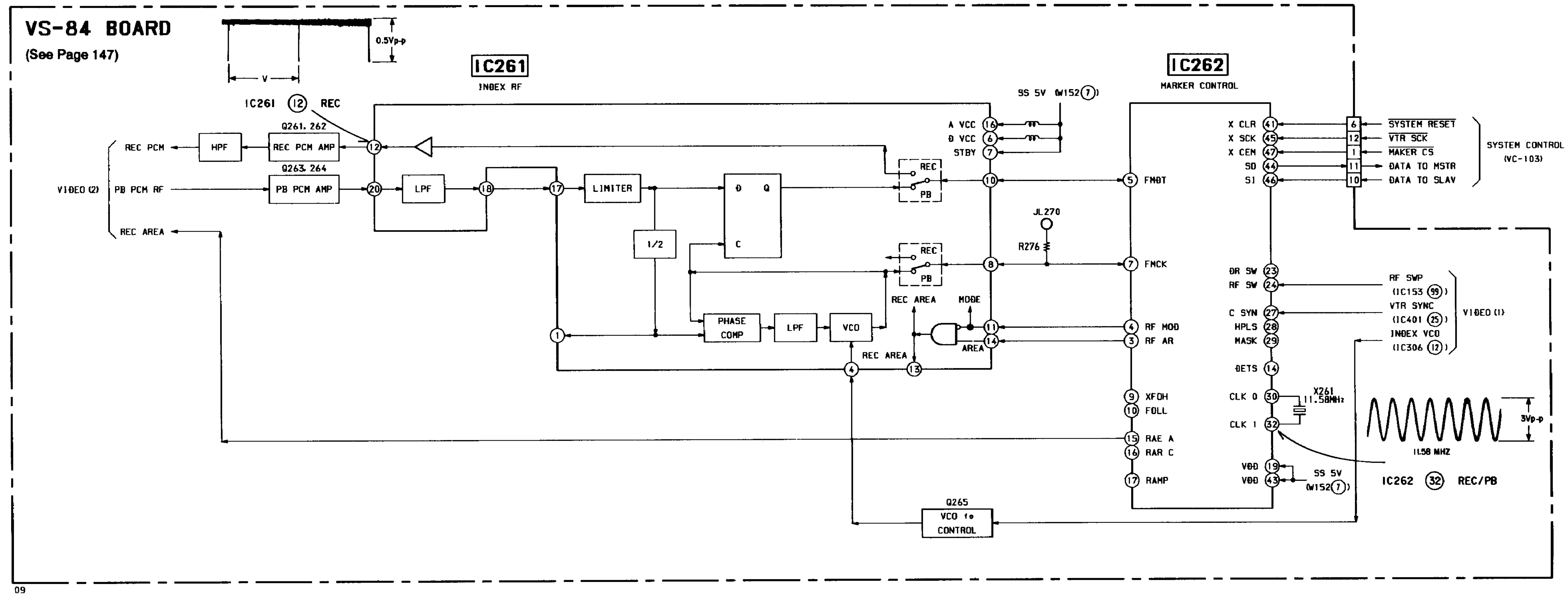
TIME CHART 1


REC/PB MODE
RF SWP
1/2 RF SWP
REC/PB MODE
PB 1A MUTE
PB 2A MUTE
PB 1B MUTE
PB 2B MUTE

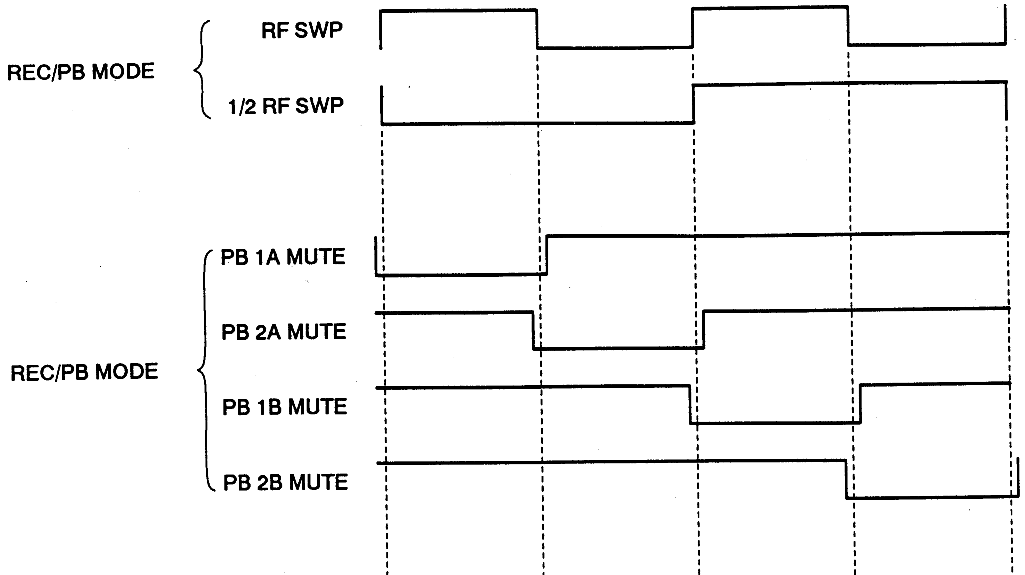
TIME CHART 2


REC MODE
REC 1A
REC 2A
REC 1B
REC 2B

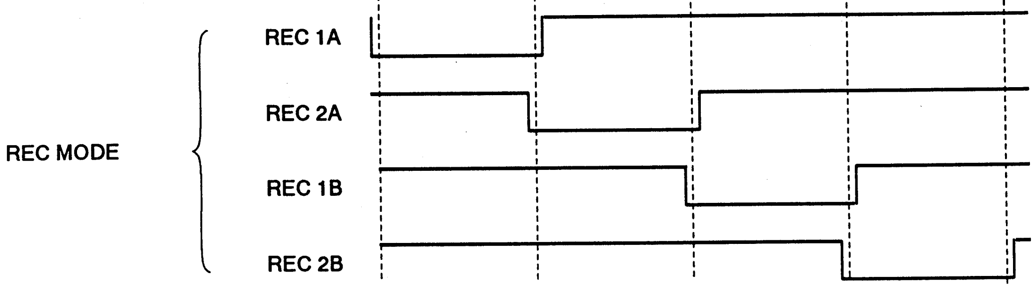
3-14. INDEX MARKER BLOCK DIAGRAM


VS-84 BOARD
(See Page 147)
0.5Vp-p
V
IC261 ⑫ REC
IC261
INDEX RF
Q261, 262
Q263, 264
REC PCM
VIDEO (2)
PB PCM RF
REC AREA
HPF
REC PCM AMP
PB PCM AMP
LPF
LIMITER
1/2
D
Q
C
PHASE COMP
LPF
VCO
REC AREA
MODE
AREA
REC AREA
REC
PB
REC
PB
SS 5V (W152 ⑦)
A VCC
D VCC
STBY
JL270
R276
IC262
MARKER CONTROL
FMDT
FMCK
RF MOD
RF AR
XFOH
FOLL
RAE A
RAR C
RAMP
X CLR
X SCK
X CEN
SO
SI
DR SW
RF SW
C SYN
HPLS
MASK
DETS
CLK 0
CLK 1
VDD
VDD
X261 11.58MHz
SS 5V (W152 ⑦)
Q265
VCO fo CONTROL
SYSTEM RESET
VTR SCK
MAKER CS
DATA TO MSTR
DATA TO SLAV
SYSTEM CONTROL (VC-103)
RF SWP (IC153 (99))
VTR SYNC (IC401 ㉕)
INDEX VCO (IC306 ⑫)
VIDEO (1)
3Vp-p
11.58 MHZ
IC262 ㉜ REC/PB
09

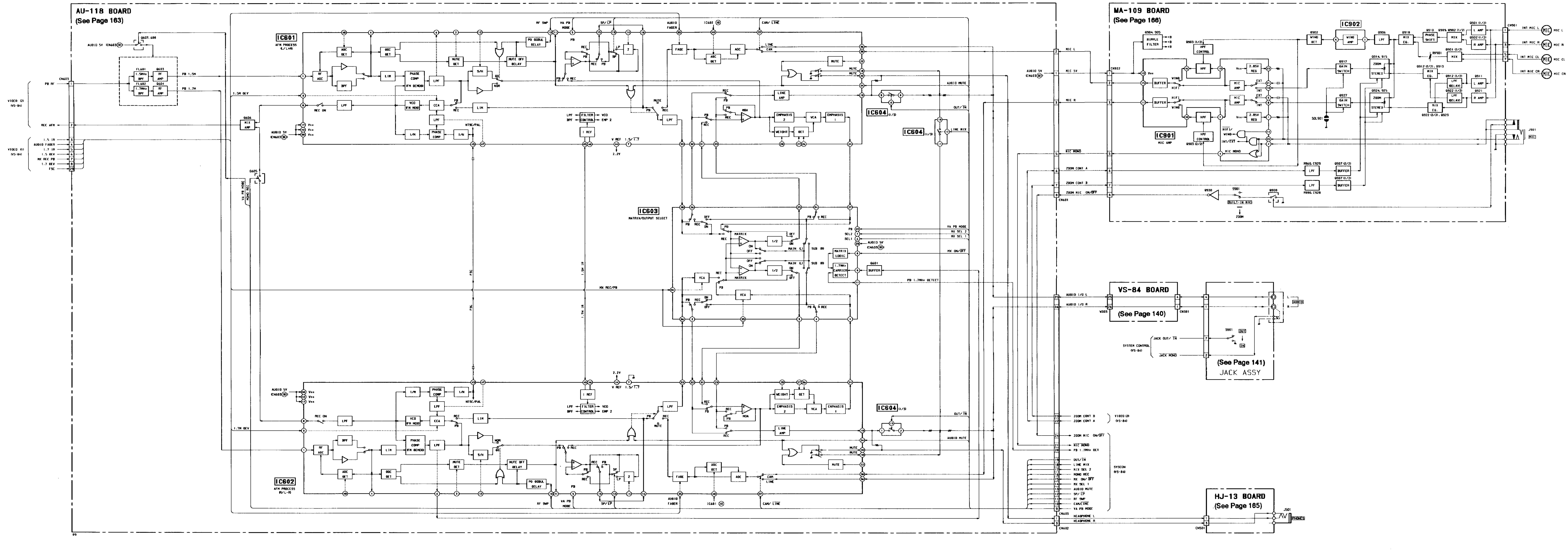
TIME CHART 1


REC/PB MODE
RF SWP
1/2 RF SWP
REC/PB MODE
PB 1A MUTE
PB 2A MUTE
PB 1B MUTE
PB 2B MUTE

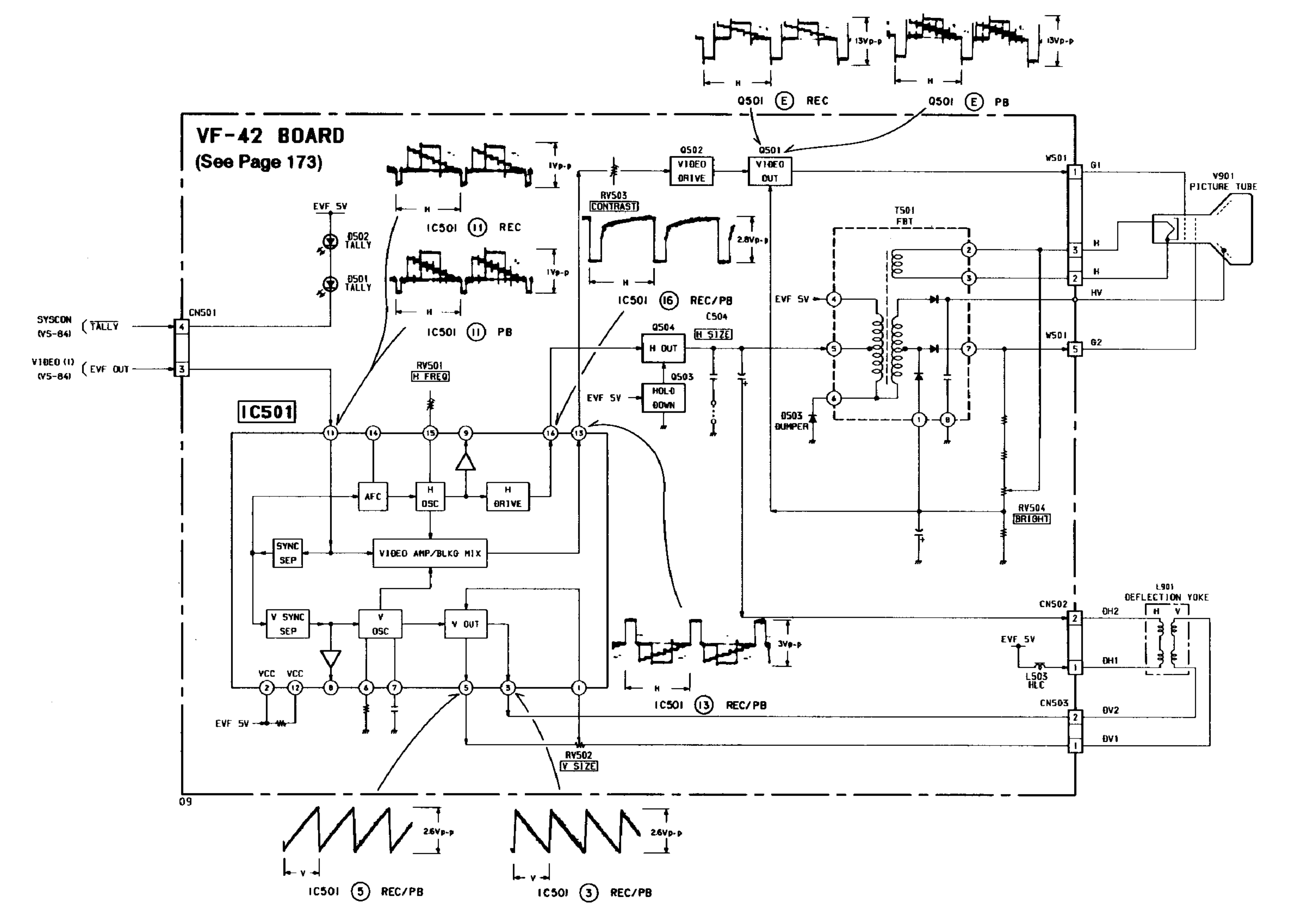
TIME CHART 2


REC MODE
REC 1A
REC 2A
REC 1B
REC 2B

3-15. AUDIO BLOCK DIAGRAM


AU-118 BOARD
(See Page 163)
IC601
IC602
IC603
IC604
MA-109 BOARD
(See Page 186)
IC902
IC901
VS-84 BOARD
(See Page 140)
(See Page 141)
JACK ASSY
HJ-13 BOARD
(See Page 185)

3-16. EVF BLOCK DIAGRAM

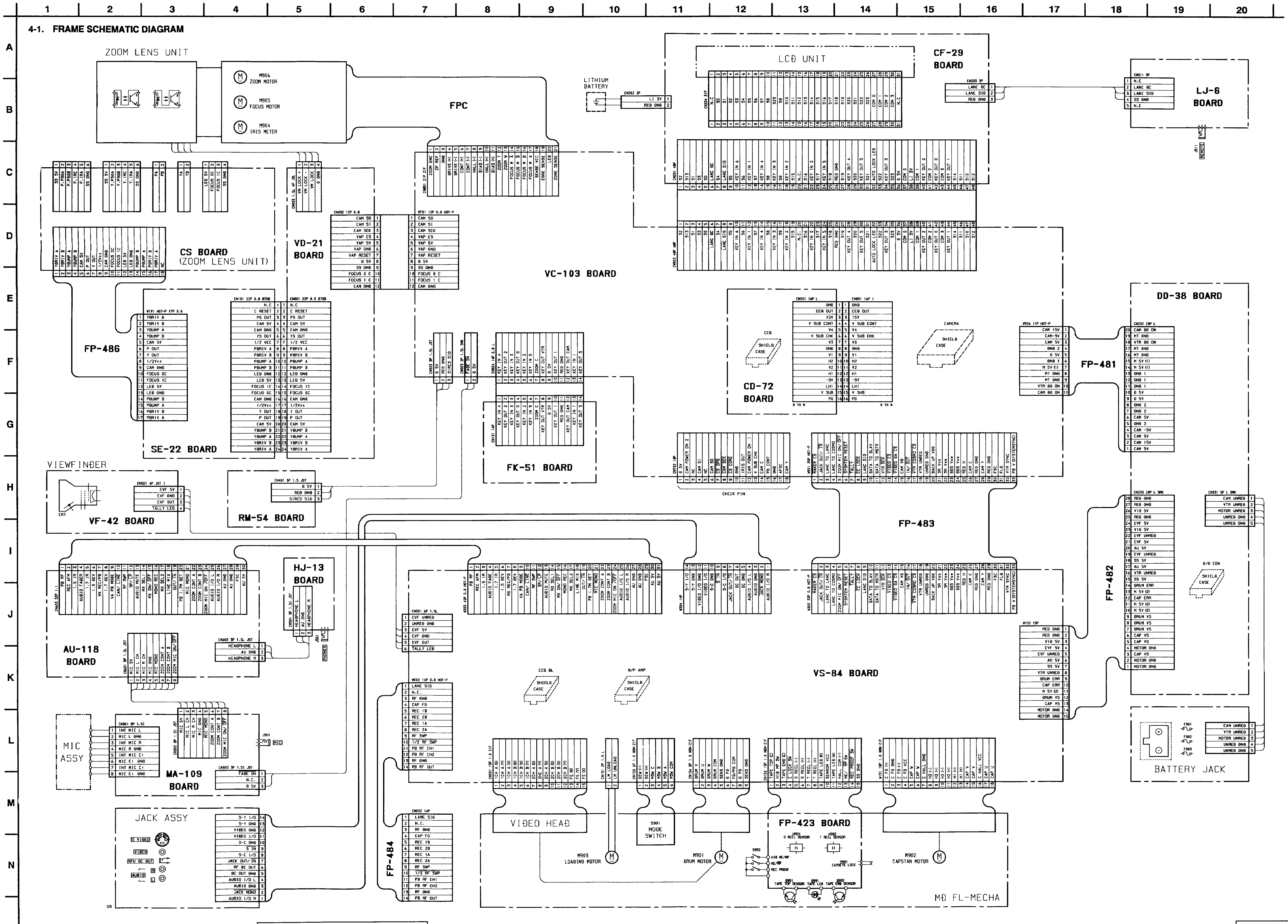

VF-42 BOARD
(See Page 173)
IC501

3-17. POWER BLOCK DIAGRAM

MAIN BATTERY
(See Page 176)
BATTERY JACK
IC231
D/C D/C CONVERTER
TRIANGLE OSC
PWM MOD
SWITCHING DRIVE
VOLTAGE ERROR AMP
SHORT CIRCUIT DETECT
TIMER LATCH SHORT CIRCUIT PROTECT
2.5V
EMERGENCY DETECT
IC232
D/C D/C CONVERTER CAPSTAN/DRUM PWM DRIVE
CAPSTAN/DRUM PWM DRIVE
(See Page 177)
DD-38 BOARD
VF-42 BOARD
(See Page 173)
IC501
(See Page 141)
JACK ASSY
(See Page 151)
FP-423 BOARD
CAPSTAN MOTOR
(See Page 144)
CURRENT LIMITER
IC152
IC157
IC156
IC151
IC154
IC153
SERVO/SYSTEM CONTROL
IC261
IC262
IC401 IC403
IC301 IC306
IC501 IC503
IC551 IC552
IC001
(See Page 129, 133, 135, 140, 143, 147) VS-84 BOARD
IC601 IC604
AU-118 BOARD
(See Page 183)
IC901 IC902
MA-109 BOARD
(See Page 168)
VC-103 BOARD (See Page 101, 106, 109, 112)
IC925
IC921
IC922
IC924
IC708
IC705
IC851
IC701
IC710
IC706
IC709
IC854
IC907
IC801
IC703
IC927
IC802
IC853
IC852
IC803
IC805
IC804
IC855
IC856
(See Page 157)
LITHIUM BATTERY
CF-29 BOARD
LJ-6 BOARD
FK-51 BOARD
(See Page 153)
(See Page 111)
LENS BLOCK
RM-54 BOARD
IC401
(See Page 154)
CS BOARD
CD-72 BOARD
(See Page 117)
IC301
SE-22 BOARD
(See Page 121)
IC101 IC104
VD-21 BOARD
(See Page 122)
IC007
IC001
IC004
IC002
IC003
IC005
IC006

SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM



ZOOM LENS UNIT
M906 ZOOM MOTOR
M905 FOCUS MOTOR
M904 IRIS METER
FPC
LITHIUM BATTERY
LCD UNIT
CF-29 BOARD
LJ-6 BOARD
CS BOARD (ZOOM LENS UNIT)
VD-21 BOARD
VC-103 BOARD
FP-486
SE-22 BOARD
FK-51 BOARD
CD-72 BOARD
CCD SHIELD CASE
CAMERA SHIELD CASE
DD-38 BOARD
FP-481
CHECK PIN
VIEWFINDER
CRT
VF-42 BOARD
RM-54 BOARD
FP-483
FP-482
HJ-13 BOARD
AU-118 BOARD
VS-84 BOARD
CCD OL SHIELD CASE
R/P AMP SHIELD CASE
D/D CON SHIELD CASE
MIC ASSY
MA-109 BOARD
BATTERY JACK
JACK ASSY
FP-484
VIDEO HEAD
S901 MODE SWITCH
M903 LOADING MOTOR
M901 DRUM MOTOR
FP-423 BOARD
M902 CAPSTAN MOTOR
MD FL-MECHA
A B C D E F G H I J K L M N O
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

VC-103 (CAMERA, LENS DRIVE, MODE CONTROL) PRINTED WIRING BOARD

--- Ref. No. VC-103 BOARD: 2000 series ---

- **For printed wiring boards.**
- VC-103 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

< DIODE >

D702	8-719-404-46	DIODE	MA110
D922	8-719-421-27	DIODE	MA728
D923	8-719-404-46	DIODE	MA110
D924	8-719-404-46	DIODE	MA110
D925	8-719-404-46	DIODE	MA110
D927	8-719-404-46	DIODE	MA110

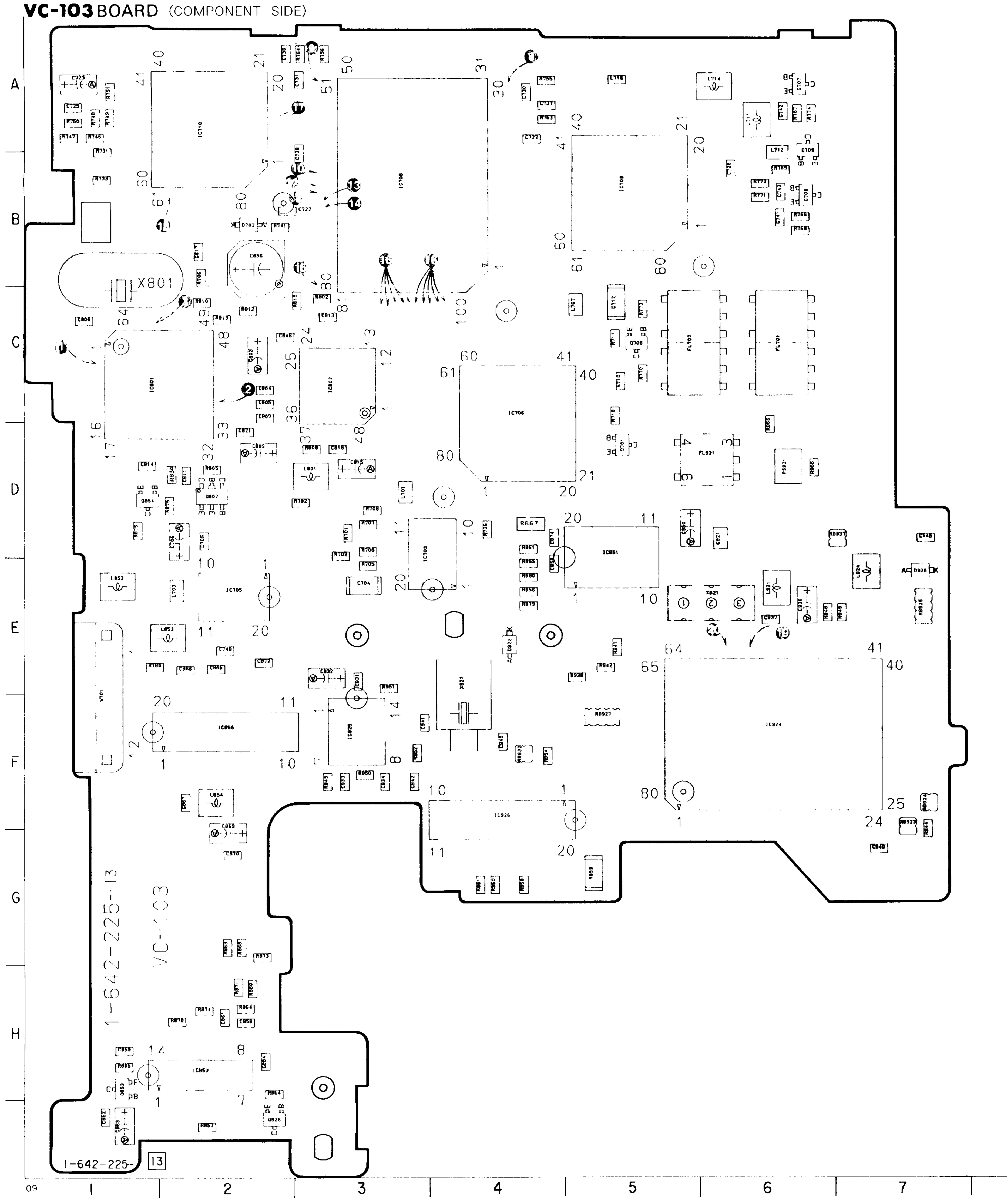
< IC >

IC701	8-759-044-78	IC	AK6420F
IC702	8-752-835-99	IC	CXP80624 277Q
IC703	8-752-337-36	IC	CXD2104N
IC705	8-759-064-36	IC	MB88346BPFV
IC706	8-759-069-18	IC	CXD2103AR
IC707	8-759-519-14	IC	MB8464-15LLPFTN
IC708	8-752-347-93	IC	CXD2100AQ
IC709	8-759-518-81	IC	CXD2112R
IC710	8-752-348-92	IC	CXD2101AR
IC711	8-759-243-19	IC	TC7SU04F
IC801	8-752-341-09	IC	CXD1256R
IC802	8-752-060-92	IC	CXA1507BR
IC803	8-752-053-26	IC	CXA1399Q
IC804	8-752-327-48	IC	CXD1250N
IC805	8-752-054-61	IC	CXA1390AR
IC851	8-759-513-26	IC	XRU5846FS
IC852	8-759-077-35	IC	NJM3414M
IC853	8-759-998-96	IC	LM324D
IC854	8-759-059-07	IC	LC78865M
IC855	8-759-038-81	IC	MPC1724M
IC856	8-759-823-51	IC	LB1830M
IC921	8-759-937-54	IC	S-81250HG-RD-S
IC922	8-759-511-22	IC	CXA1448N
IC923	8-759-044-78	IC	AK6420F
IC924	8-759-066-76	IC	uPD75316GF-SGX3120U
IC925	8-759-999-02	IC	TL1596CDB
IC926	8-759-145-63	IC	uPD7564G-540
IC927	8-759-069-29	IC	uPD6456GS-618

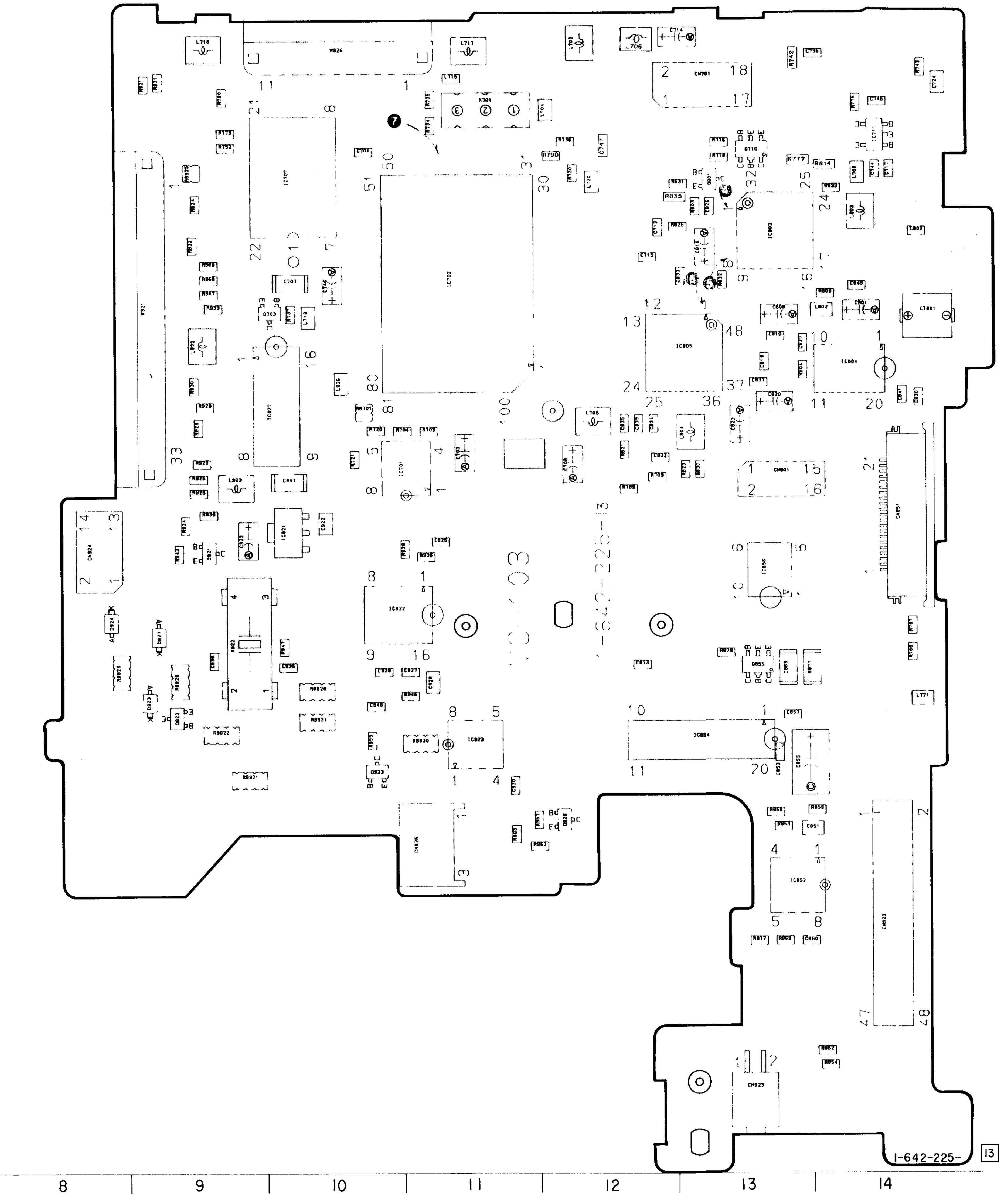
< TRANSISTOR >

Q701	8-729-905-61	TRANSISTOR	DTC124EU
Q703	8-729-905-18	TRANSISTOR	DTC144EU
Q706	8-729-905-23	TRANSISTOR	2SA1576-R
Q707	8-729-905-23	TRANSISTOR	2SA1576-R
Q708	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q709	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q710	8-729-402-84	TRANSISTOR	XN4601
Q801	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q802	8-729-403-27	TRANSISTOR	XN4401
Q853	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q854	8-729-907-00	TRANSISTOR	DTC114EU
Q855	8-729-403-27	TRANSISTOR	XN4401
Q921	8-729-905-XX	TRANSISTOR	DTC114TUT106
Q922	8-729-905-XX	TRANSISTOR	DTC114TUT106
Q923	8-729-907-00	TRANSISTOR	DTC114EU
Q925	8-729-905-12	TRANSISTOR	DTA144EU
Q926	8-729-905-XX	TRANSISTOR	DTC114TUT106

VC-103 BOARD (COMPONENT SIDE)



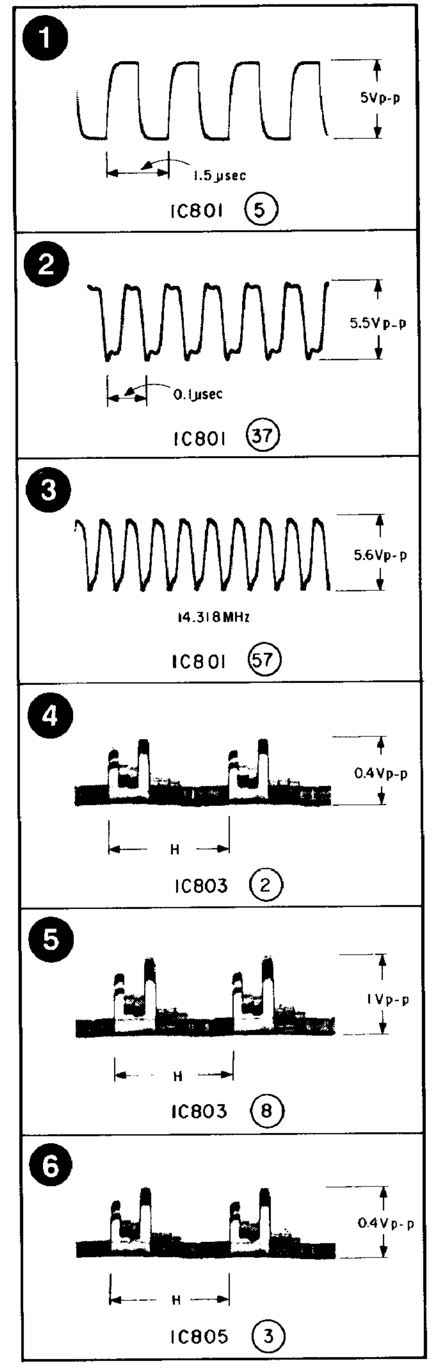
VC-103 BOARD (CONDUCTOR SIDE)

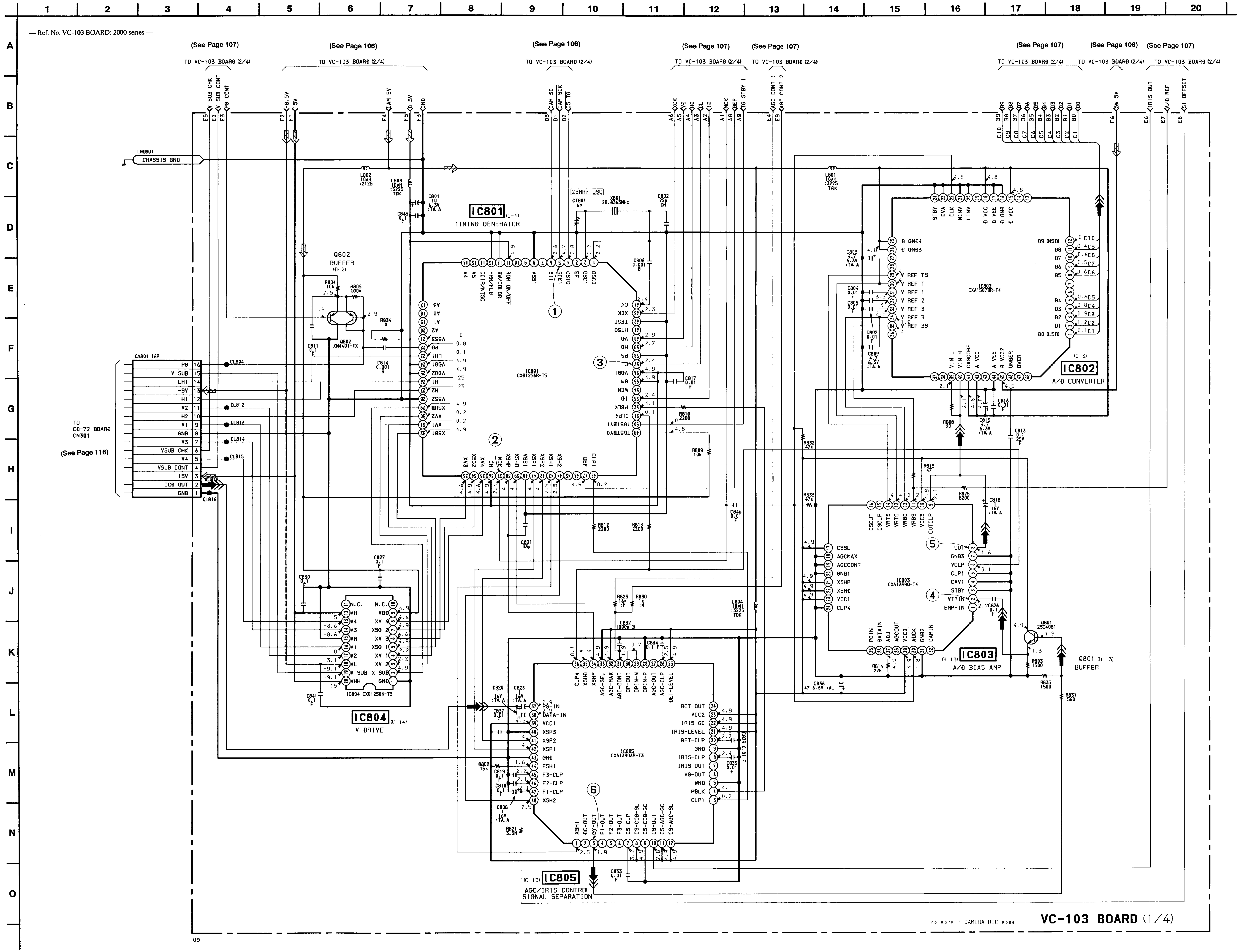


VC-103 (CAMERA) SCHEMATIC DIAGRAM

- Refer to page 98 for Printed Wiring Board.

VC-103 BOARD (1/4)

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A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
— Ref. No. VC-103 BOARD: 2000 series —
(See Page 107)
(See Page 106)
(See Page 106)
(See Page 107)
(See Page 107)
(See Page 107)
(See Page 106)
(See Page 107)
TO VC-103 BOARD (2/4)
CHASSIS GND
LND801
IC801
TIMING GENERATOR
CXD1256R-T5
28MHz OSC
X801
Q802
BUFFER
XN4401-TX
IC802
A/D CONVERTER
CXA1587BR-T4
IC803
A/D BIAS AMP
CXA1395Q-T4
IC804
V DRIVE
CXD1250N-T3
IC805
AGC/IRIS CONTROL
SIGNAL SEPARATION
CXA1390AR-T3
Q801
BUFFER
2SC4081
CN801 16P
TO
CD-72 BOARD
CN301
(See Page 116)
no mark : CAMERA REC mode
VC-103 BOARD (1/4)
09

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this , the necessary note is printed in each block.)

- **For printed wiring boards.**
- ○— : indicated a lead wire mounted on the component side.
- —— : indicated a lead wire mounted on the conductor side.
- ■ : Parts mounted on the conductor side.
- ▨ : Pattern from the side which enables seeing.

  (The other layers'patterns are not indicated.)
- Circled numbers refer to waveforms.
- (B) or (F), etc. of capacitors indicate the temperature characteristics.
- ● : Through hole.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

- **For schematic diagrams.**
- Caution when replacing chip parts.

  New parts must be attached after removal of chip.

  Be careful not to heat the minuts side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.

  Chip resistor are 1/10W unless otherwise noted.

  kΩ : 1000Ω , MΩ : 1000kΩ .
- All capacitors are in μF unless otherwise noted. pF: μ μF.

  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ⊞ : nonflammable resistor.
- ⊟ : fusible resistor.
- ☐ : panel designation.
- △ : internal component.
- [ ] : adjustment for repeair.
- —— : B+ Line.
- - - - : B– Line.
- ⇛ : IN/OUT direction of (+, –) B LINE.
- Circled numbers refer to waveforms.

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safty. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

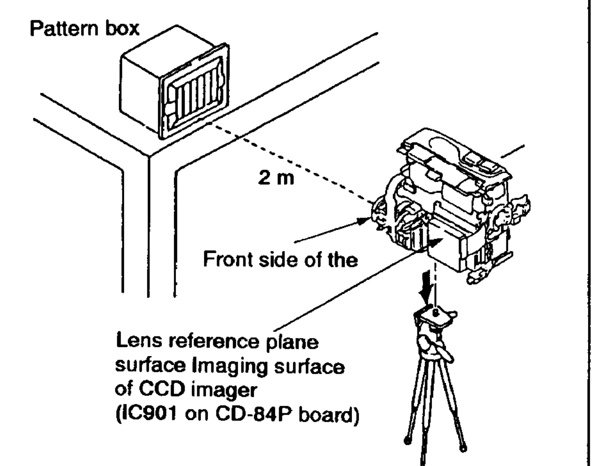
When indicating parts by reference number, please include the board name.

- **Measuring conditions voltage value and waveform.**

(CAMERA, DIGITAL TITLE block)

- The object is color bar chart of pattern box
- Voltages are dc between ground and measurement points. Readings are taken with a digital multimeter (DC 10MΩ).
- Voltage variations may be noted due to normal production tolerances.

1. Connection


Pattern box
2 m
Front side of the
Lens reference plane
surface Imaging surface
of CCD imager
(IC901 on CD-84P board)

2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

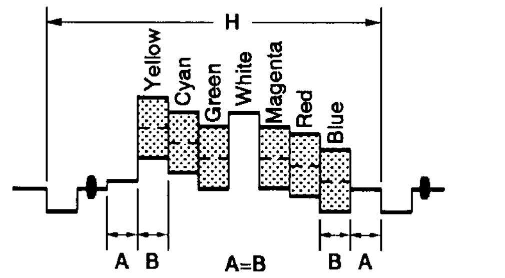

H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A
B
A=B
B
A

Fig. a (Video output terminal output waveform)

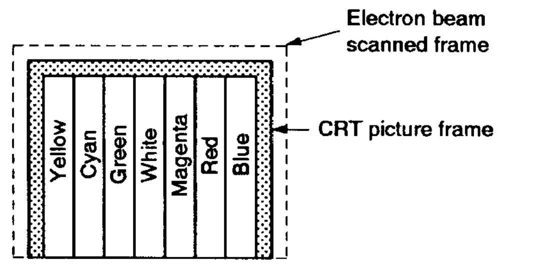

Electron beam
scanned frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. (Picture on monitor TV)

(VIDEO, SERVO/SYSTEM CONTROL, LCD CONTROL, AUDIO, VIEW FINDER block)

- Voltages are dc between ground and measurement points.
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

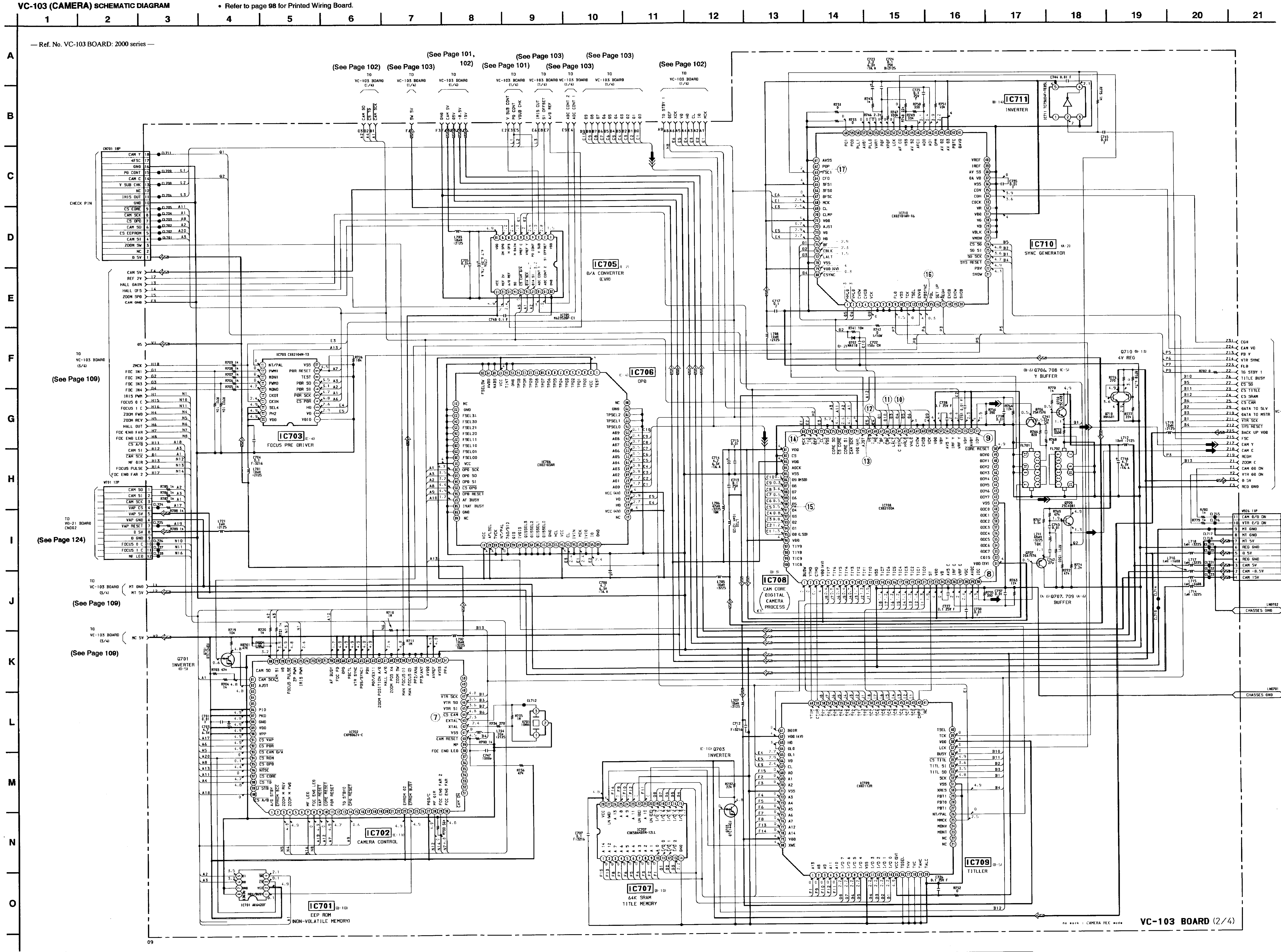
- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			➡》	
PB				

VC-103 (CAMERA) SCHEMATIC DIAGRAM

• Refer to page 98 for Printed Wiring Board.

— Ref. No. VC-103 BOARD: 2000 series —

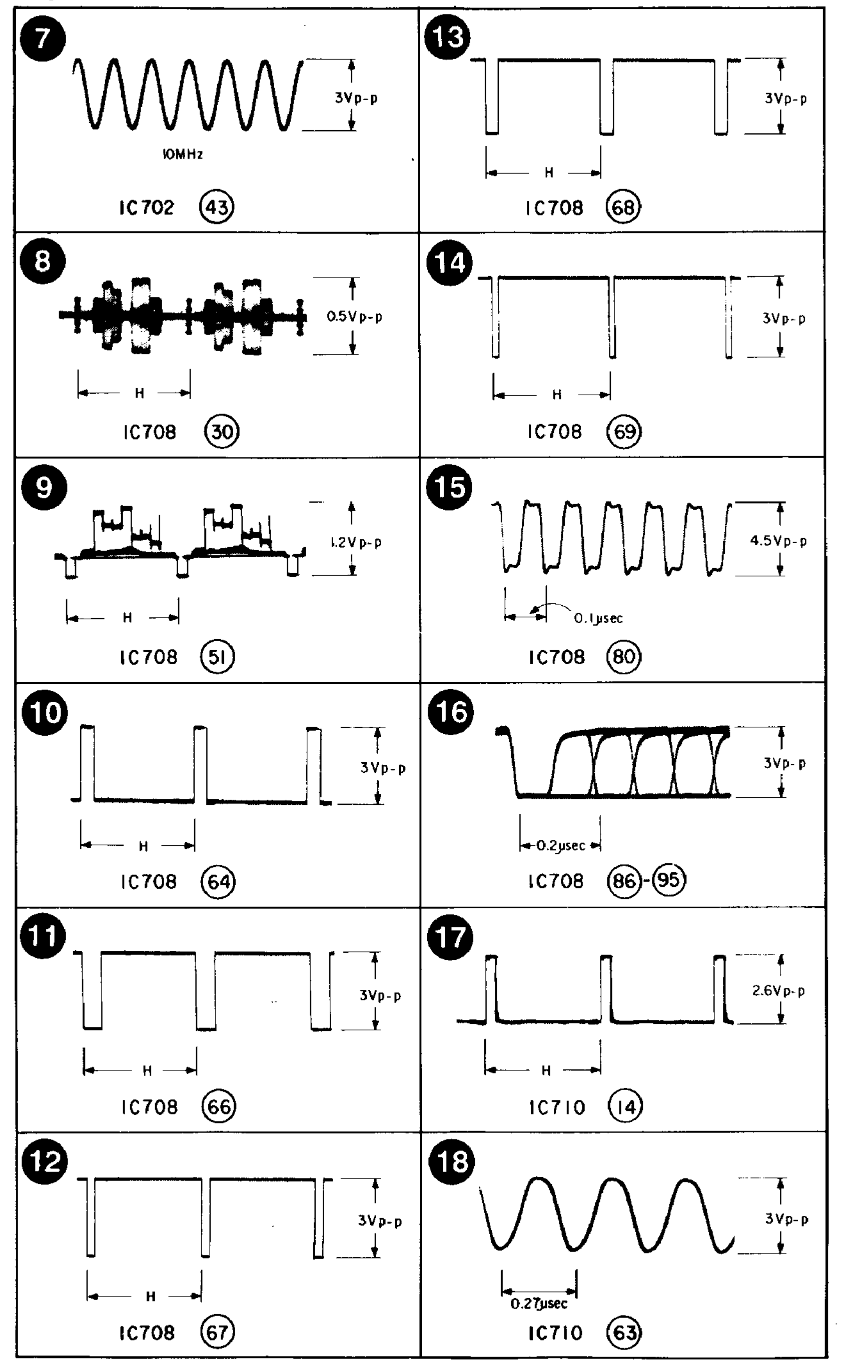


(See Page 102)
(See Page 103)
(See Page 101, 102)
(See Page 101)
(See Page 103)
(See Page 103)
(See Page 102)
TO VC-103 BOARD (1/4)
CHECK PIN
CN701 18P
TO VC-103 BOARD (3/4)
(See Page 109)
TO VO-21 BOARD CN002
(See Page 124)
TO VC-103 BOARD (3/4)
(See Page 109)
TO VC-103 BOARD (3/4)
(See Page 109)
Q701 INVERTER
IC705 D/A CONVERTER (EVR)
IC706 OPD
IC703 FOCUS PRE DRIVER
IC711 INVERTER
IC710 SYNC GENERATOR
Q710 4V REG
Q704, 706 Y BUFFER
Q707, 709 BUFFER
IC708 CAM CORE DIGITAL CAMERA PROCESS
TO VC-103 BOARD (4/4)
(See Page 112)
TO DE-38 BOARD CN202
(See Page 178)
CHASSIS GND
IC702 CAMERA CONTROL
IC701 EEP ROM (NON-VOLATILE MEMORY)
Q703 INVERTER
IC707 64K SRAM TITLE MEMORY
IC709 TITLER
VC-103 BOARD (2/4)

• **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡»	➡»»	
PB				

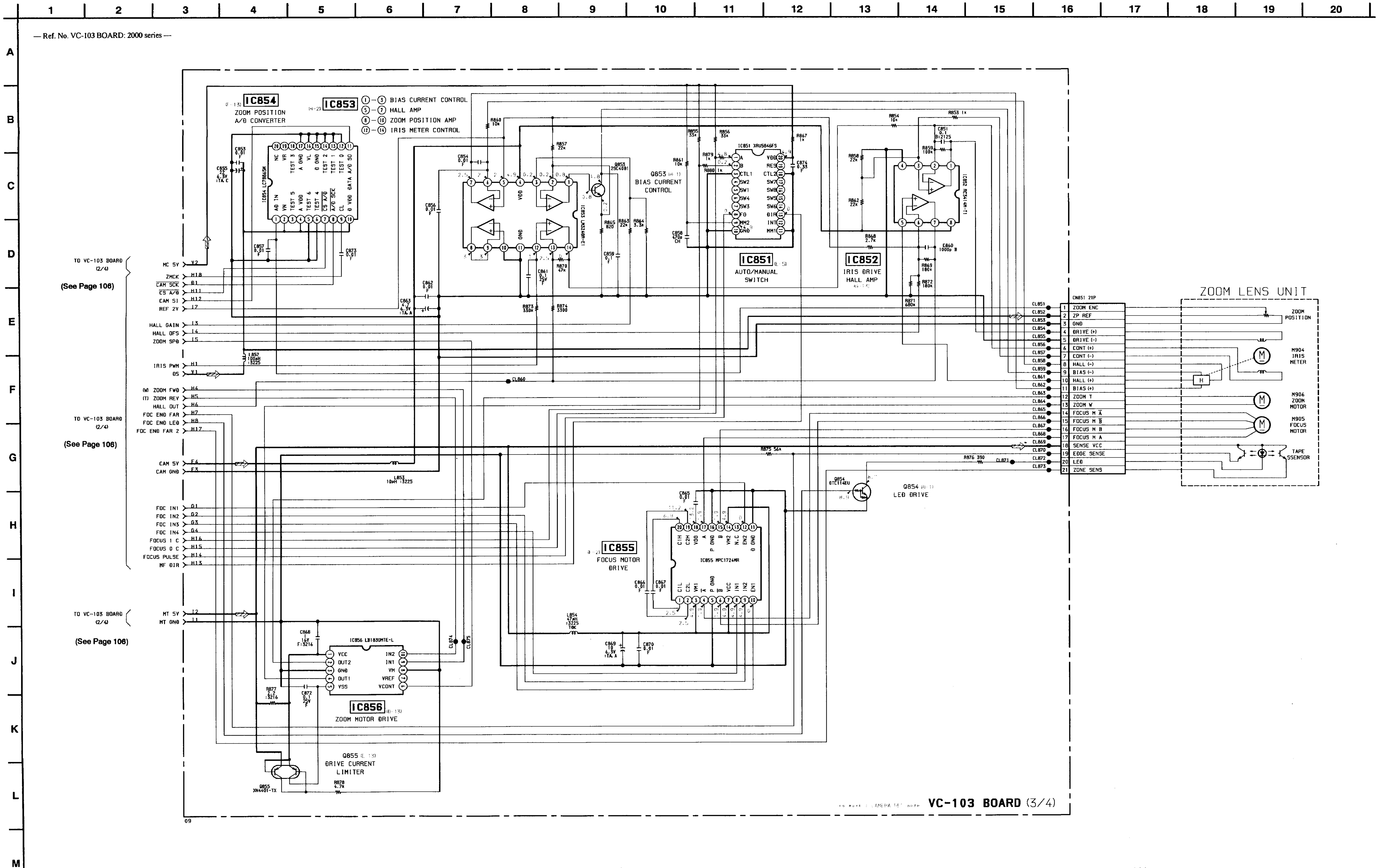
VC-103 BOARD (2/4)



VC-103 (LENS DRIVE) SCHEMATIC DIAGRAM

• Refer to page 98 for Printed Wiring Board.

— Ref. No. VC-103 BOARD: 2000 series —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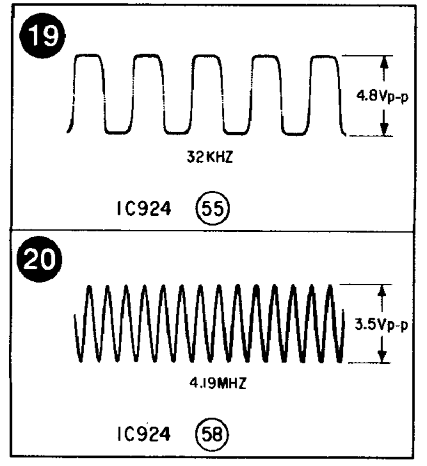
C
D
E
F
G
H
I
J
K
L
M
IC854
ZOOM POSITION
A/D CONVERTER
IC853
①-③ BIAS CURRENT CONTROL
⑤-⑦ HALL AMP
⑧-⑩ ZOOM POSITION AMP
⑫-⑭ IRIS METER CONTROL
IC854 LC7886SM
Q853
BIAS CURRENT
CONTROL
IC851 XRU5846FS
IC851
AUTO/MANUAL
SWITCH
IC852
IRIS DRIVE
HALL AMP
TO VC-103 BOARD
(2/4)
(See Page 106)
MC 5V
ZMCK
CAM SCK
CS A/D
CAM SI
REF 2V
HALL GAIN
HALL OFS
ZOOM SPD
IRIS PWM
DS
(W) ZOOM FWD
(T) ZOOM REV
HALL OUT
FOC END FAR
FOC END LED
FOC END FAR 2
CAM 5V
CAM GND
FOC IN1
FOC IN2
FOC IN3
FOC IN4
FOCUS 1 C
FOCUS 0 C
FOCUS PULSE
MF DIR
MT 5V
MT GND
V2
H18
D1
H11
H12
I7
I3
I4
I5
H1
V1
H4
H5
H6
H7
H8
H17
E4
E3
G1
G2
G3
G4
H16
H15
H14
H13
I2
I1
CN851 21P
1 ZOOM ENC
2 ZP REF
3 GND
4 DRIVE (+)
5 DRIVE (−)
6 CONT (+)
7 CONT (−)
8 HALL (−)
9 BIAS (−)
10 HALL (+)
11 BIAS (+)
12 ZOOM T
13 ZOOM W
14 FOCUS M Ā
15 FOCUS M B̄
16 FOCUS M B
17 FOCUS M A
18 SENSE VCC
19 EDGE SENSE
20 LED
21 ZONE SENS
CL851
CL852
CL853
CL854
CL855
CL856
CL857
CL858
CL859
CL861
CL862
CL863
CL864
CL865
CL866
CL867
CL868
CL869
CL870
CL871
CL872
CL873
CL860
CL874
CL875
ZOOM LENS UNIT
ZOOM
POSITION
M904
IRIS
METER
H
M906
ZOOM
MOTOR
M905
FOCUS
MOTOR
TAPE
SSENSOR
Q854
LED DRIVE
IC855
FOCUS MOTOR
DRIVE
IC855 MPC1724MR
IC856 LB1830MTE-L
VCC
OUT2
GND
OUT1
VSS
IN2
IN1
VM
VREF
VCONT
IC856
ZOOM MOTOR DRIVE
Q855
DRIVE CURRENT
LIMITER
Q855
XN4401-TX
L852
L853
L854
R875 56k
R876 390
R878
4.7k
VC-103 BOARD (3/4)

- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡		
PB				

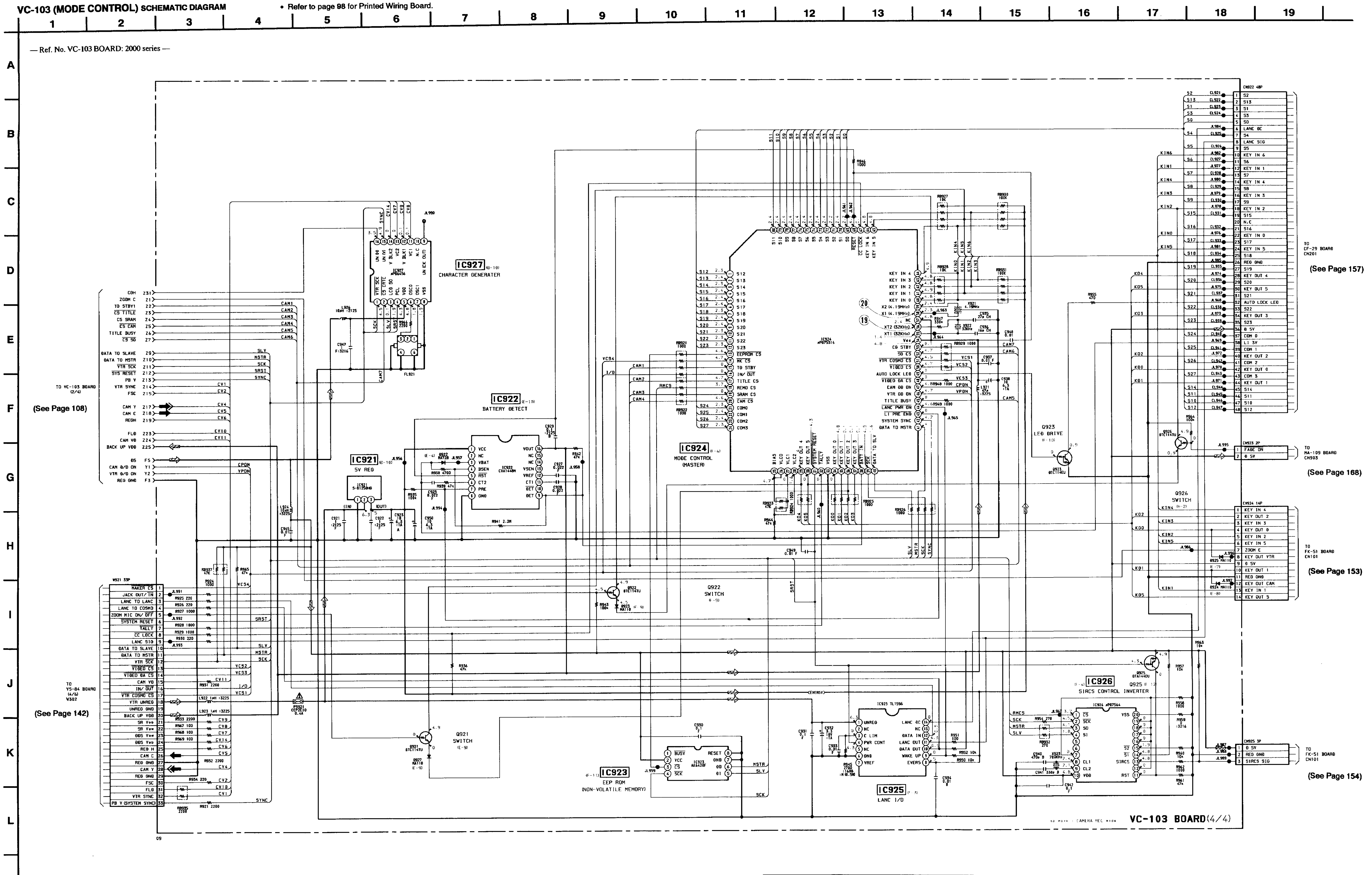
VC-103 BOARD (4/4)



VC-103 (MODE CONTROL) SCHEMATIC DIAGRAM

- Refer to page 98 for Printed Wiring Board.

— Ref. No. VC-103 BOARD: 2000 series —



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19
A
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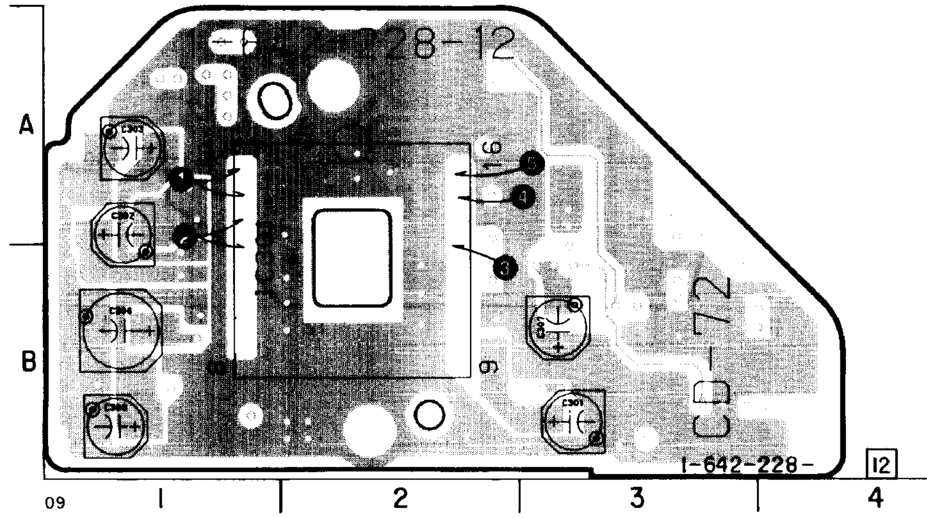
C
D
E
F
G
H
I
J
K
L
IC927
CHARACTER GENERATER
IC922
BATTERY DETECT
IC921
5V REG
IC924
MODE CONTROL (MASTER)
IC923
EEP ROM (NON-VOLATILE MEMORY)
IC925
LANC I/O
IC926
SIRCS CONTROL INVERTER
Q921 SWITCH
Q922 SWITCH
Q923 LED DRIVE
Q926 SWITCH
Q925
TO VC-103 BOARD (2/4)
(See Page 108)
TO VS-84 BOARD (4/6) V302
(See Page 142)
TO CF-29 BOARD CN201
(See Page 157)
TO MA-109 BOARD CN903
(See Page 168)
TO FK-51 BOARD CN101
(See Page 153)
TO FK-51 BOARD CN101
(See Page 154)
CN922 48P
CN923 2P
CN924 14P
CN925 3P
V921 33P
VC-103 BOARD(4/4)

CD-72 (CCD IMAGER) PRINTED WIRING BOARD

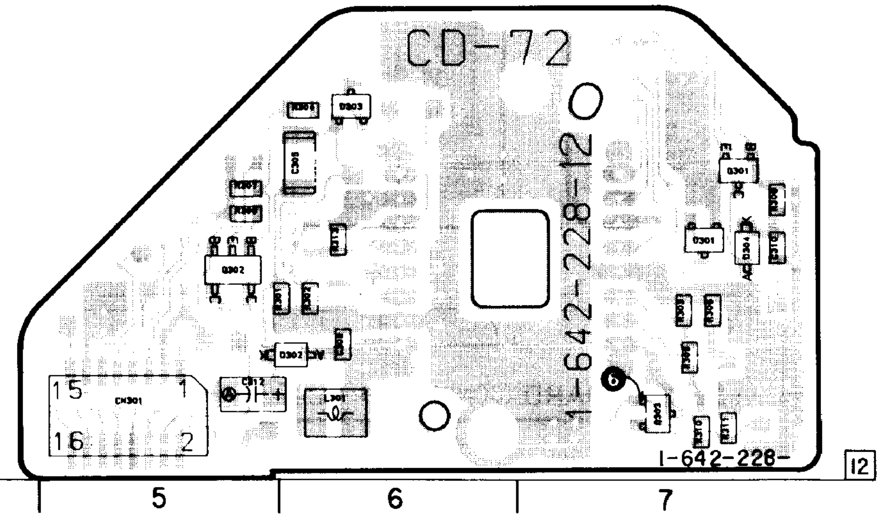
— Ref. No. CD-72 BOARD: 1000 series —

CD-72 BOARD (COMPONENT SIDE)



A
B
228-12
CD-72
1-642-228-
12
09
1
2
3
4

CD-72 BOARD (CONDUCTOR SIDE)



CD-72
1-642-228-12
15
16
1
2
CN301
1-642-228-
12
5
6
7

- **For printed wiring boards.**
- CD-72 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

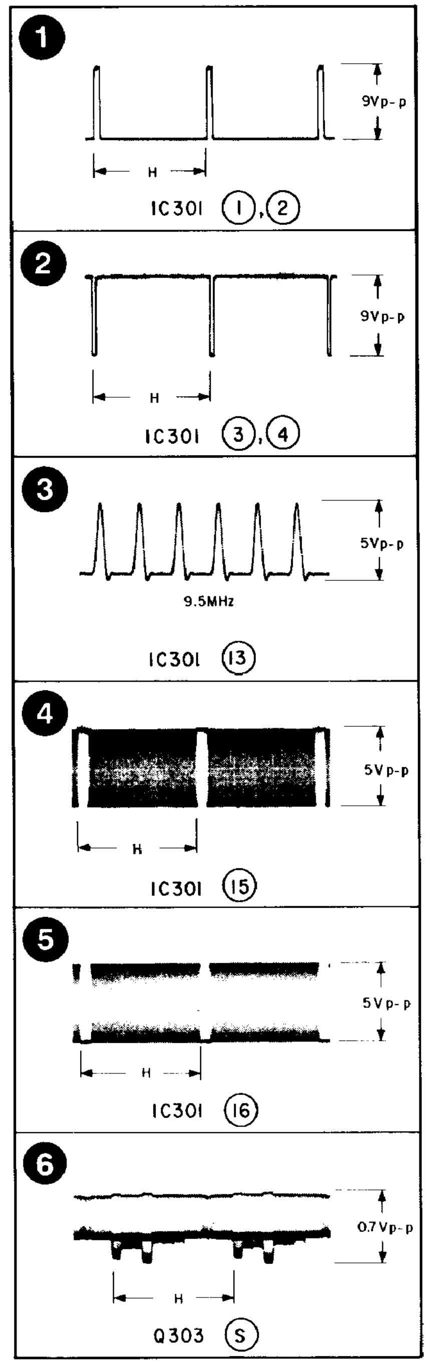
< DIODE >

D301	8-719-800-76	DIODE	1SS226
D302	8-719-404-46	DIODE	MA110
D303	8-719-820-05	DIODE	1SS181
D304	8-719-404-46	DIODE	MA110

< TRANSISTOR >

Q301	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q302	8-729-903-10	TRANSISTOR	FMW1
Q303	8-729-232-86	TRANSISTOR	2SK1875

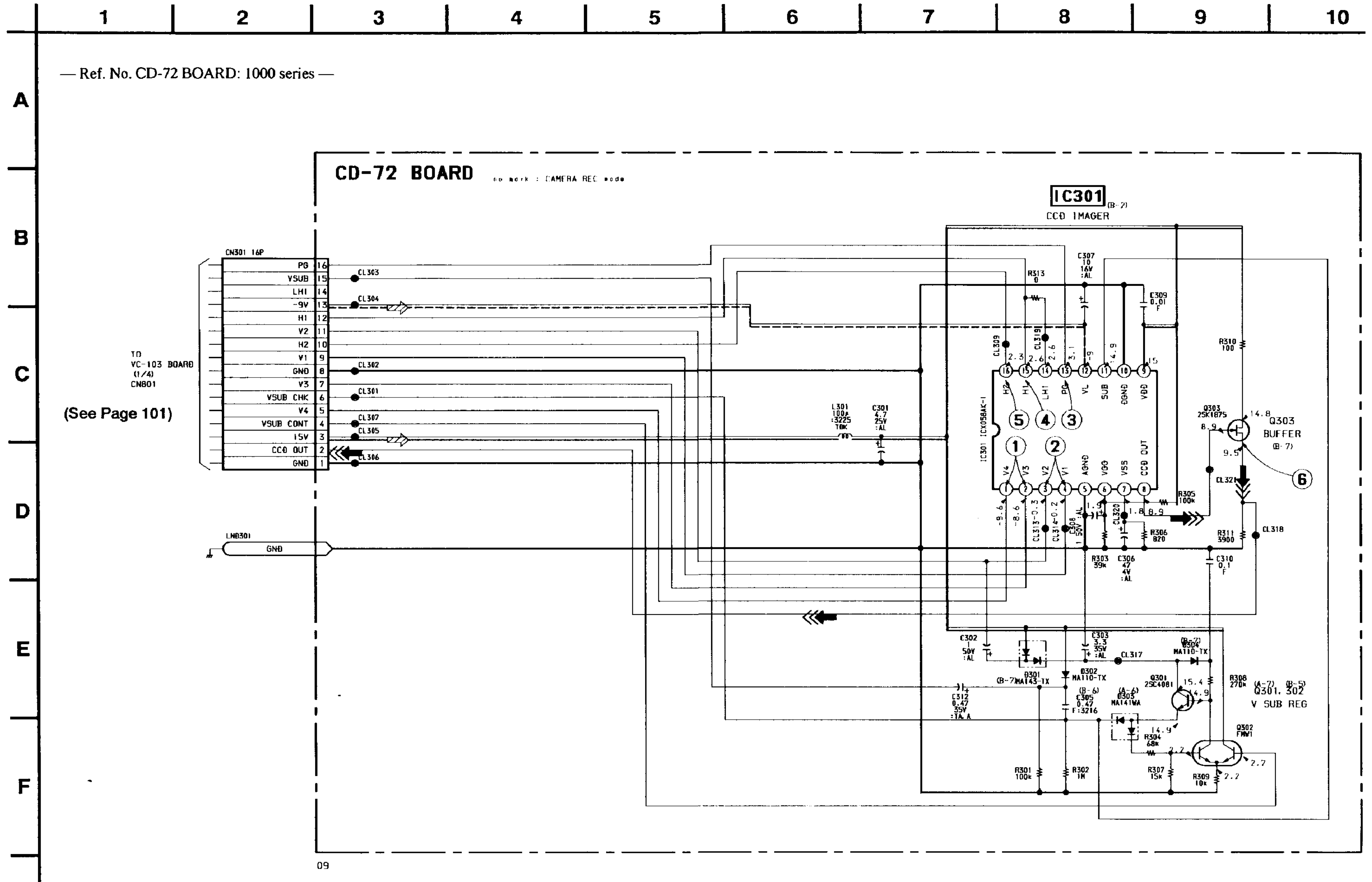
CD-72 BOARD



CD-72 (CCD IMAGER) SCHEMATIC DIAGRAM

— Ref. No. CD-72 BOARD: 1000 series —

(See Page 101)



1
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7
8
9
10
A
B
C
D
E
F
CD-72 BOARD
CN301 16P
PG 16
VSUB 15
LHI 14
-9V 13
H1 12
V2 11
H2 10
V1 9
GND 8
V3 7
VSUB CHK 6
V4 5
VSUB CONT 4
15V 3
CCD OUT 2
GND 1
TO VC-103 BOARD (1/4) CN801
LND301
GND
CL303
CL304
CL302
CL301
CL307
CL305
CL306
IC301 (B-2)
CCD IMAGER
IC301 ICX058AK-1
H2
H1
LH1
PG
VL
SUB
DGND
VDD
V4
V3
V2
V1
AGND
VGG
VSS
CCD OUT
R313 0
C307 10 16V :AL
C309 0.01 F
CL309
CL319
C301 4.7 25V :AL
R310 100
Q303 2SK1875
Q303 BUFFER (B-7)
CL321
CL318
R305 100k
R306 820
R311 3900
R303 39k
C306 47 4V :AL
C308 1 50V :AL
CL320
CL313
CL314
C310 0.1 F
C302 1 50V :AL
C303 3.3 35V :AL
CL317
D301 (B-7) MA143-TX
D302 MA110-TX
D304 (B-2) MA110-TX
C305 (B-6) 0.47 F:3216
D303 (A-6) MA141WA
C312 0.47 35V :TA, A
Q301 2SC4081
R308 270k
(A-7) (B-5) Q301, 302 V SUB REG
R304 68k
R307 15k
R309 10k
Q302 FMW1
R301 100k
R302 1M
09

- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			➡≫	
PB				

Note on the CCD imager replacement

- Some of this units require the correction data by the CCD imager (IC901 on CD-72 board), some do not.
  The correction data is input in F page and addresses 1D to 2C of the camera micro processor (IC709 on VC-103 board), and also written on the CCD data label put on the shield case (upper) of the DD-38 board.
  The correction data is not required for the CCD imager supplied for repair. Therefore, when replacing the CCD imager to which the CCD data label is put, remove the CCD data label and input 00 to F page and addresses 1D to 2C of the camera micro processor. Refer to the camera adjustment for input method.
- The CCD imager is not mounted for the already mounted CD-72 board supplied as the repair parts.
  When replacing the CD-72 board, remove the CCD imager from the old board and install on the new board.
- Perform all adjustments of the camera block when the CCD imager has been replaced.
- Handle the CCD imager with attention such as MOS IC as it may be broken by static electricity in the structure.
  Also, prevent the receiving light section from dust attached and strong light.

< IC >

IC001	8-759-077-35	IC	NJM3414M
IC002	8-759-998-96	IC	LM324D
IC003	8-759-981-75	IC	RC3403AM
IC004	8-759-077-35	IC	NJM3414M
IC005	8-759-058-98	IC	SC370605DR
IC006	8-752-834-58	IC	CXP80624-268Q
IC007	8-759-500-11	IC	NM1036XF

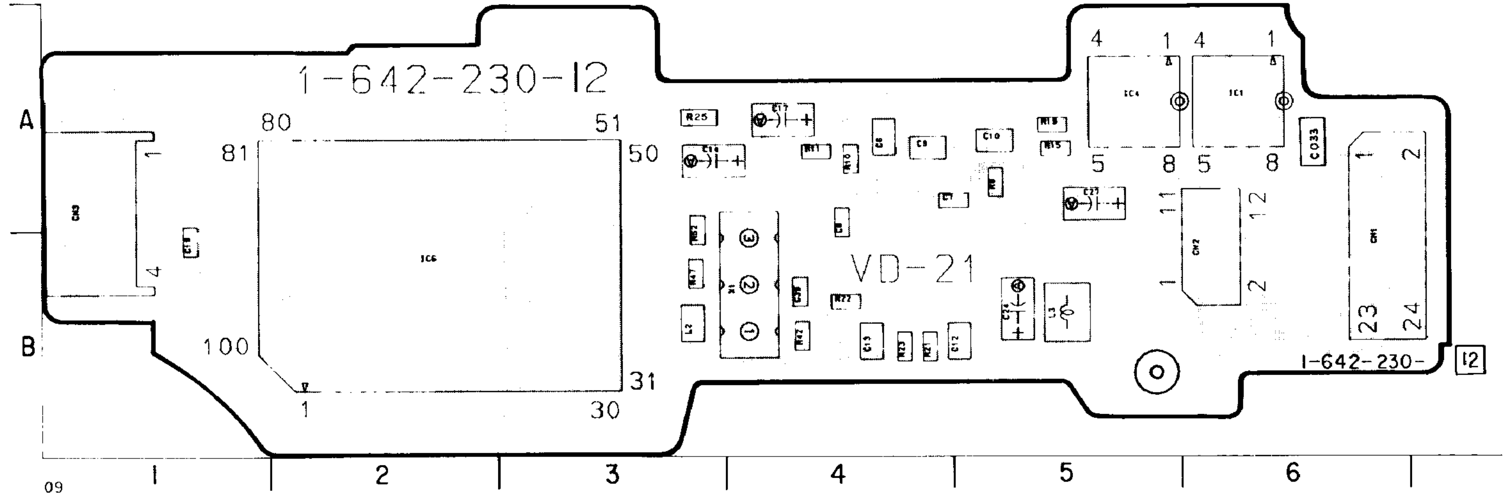
< TRANSISTOR >

Q001	8-729-920-XX	TRANSISTOR	DTA114EU
Q002	8-729-402-78	TRANSISTOR	XN6401
Q003	8-729-402-42	TRANSISTOR	UN5213

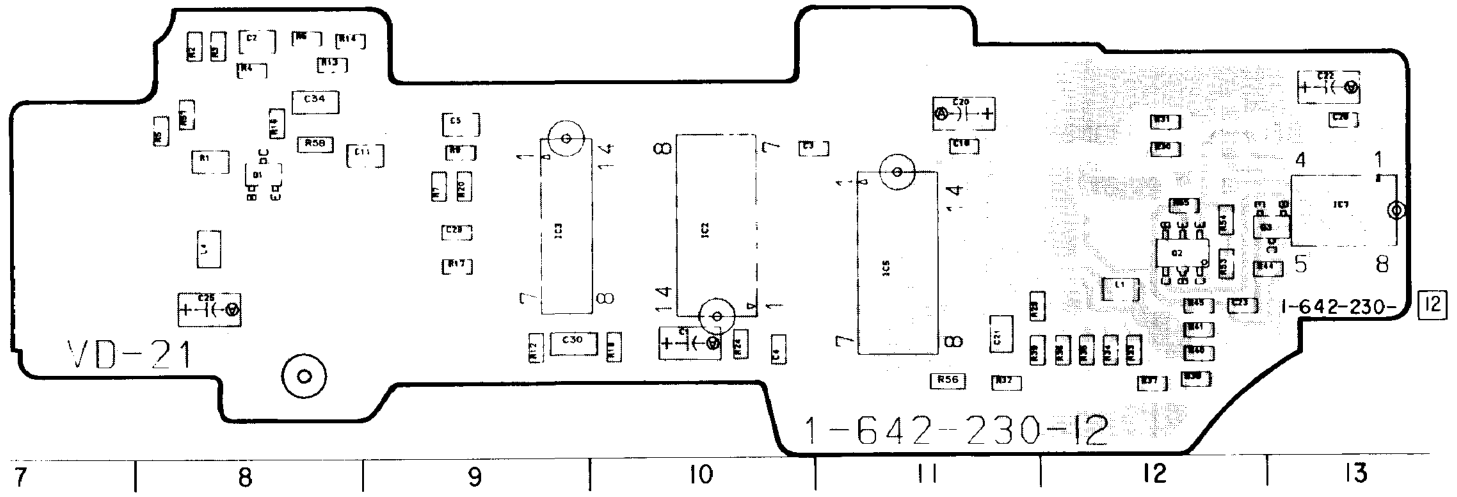
VD-21 (LENS CONTROL), SE-22 (LENS CONTROL) PRINTED WIRING BOARDS

— Ref. No. VD-21, SE-22 BOARDS: 2000 series —

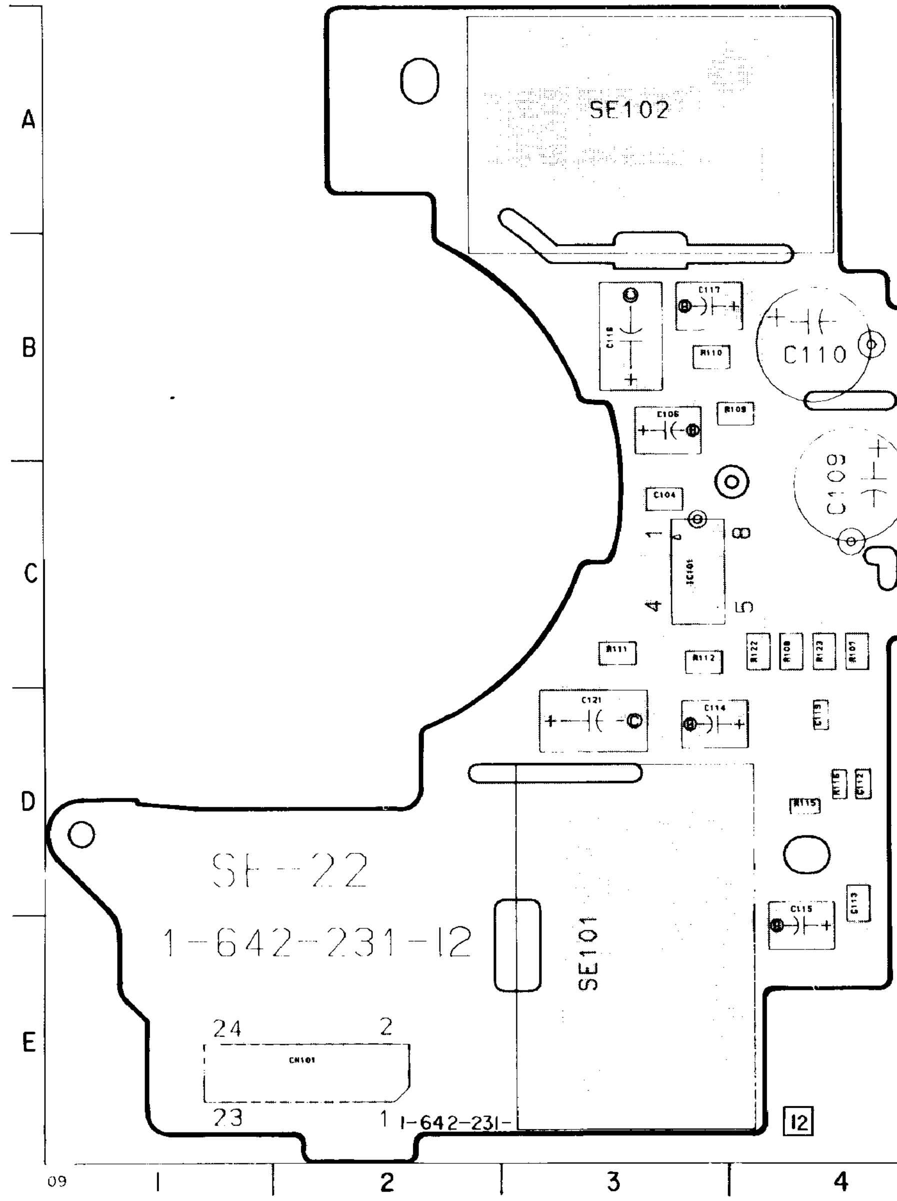
VD-21BOARD (COMPONENT SIDE)


1-642-230-12
A
B
80
51
81
50
100
31
1
30
VD-21
1-642-230-
12
09
1
2
3
4
5
6

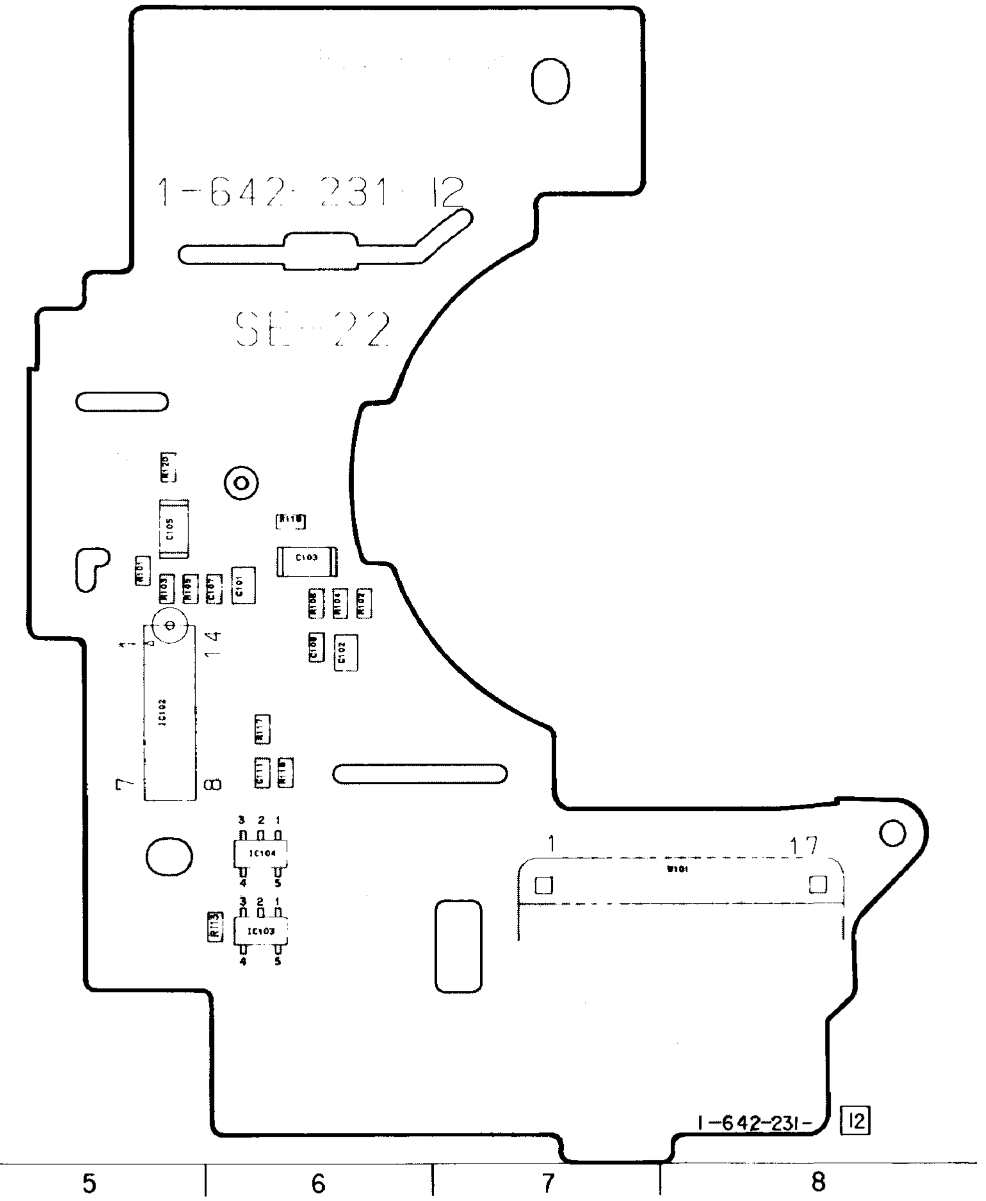
VD-21BOARD (CONDUCTOR SIDE)


VD-21
1-642-230-12
1-642-230-
12
7
8
9
10
11
12
13

SE-22BOARD (COMPONENT SIDE)


A
B
C
D
E
SE102
C110
C109
SE-22
1-642-231-12
SE101
24
2
23
1
1-642-231-
12
09
1
2
3
4

SE-22 BOARD (CONDUCTOR SIDE)


1-642-231-12
SE-22
1
17
1-642-231-
12
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6
7
8

- **For printed wiring boards.**
- VD-21, SE-22 boards are the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

< IC >

IC101	8-759-998-98	IC	LM358D
IC102	8-759-981-75	IC	RC3403AM
IC103	8-759-234-77	IC	TC4S66F
IC104	8-759-234-77	IC	TC4S66F

VD-21 (LENS CONTROL), SE-22 (LENS CONTROL) SCHEMATIC DIAGRAMS

— Ref. No. VD-21, SE-22 BOARDS: 2000 series —

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
A B C D E F G H I J
SE-22 BOARD
IC101 (C-3) LPF
IC101 LM358
IC102 (D-5) YS/PS AMP 1/2 Vcc BUFFER
IC102 NJM3403
IC103 (E-6) RESET SWITCH
IC103 TC4S66F
IC104 (D-6) RESET SWITCH
IC104 TC4S66F
SE101
SE102
CN101 24P
1 N.C
2 C RESET
3 PS OUT
4 CAM 5V
5 CAM GND
6 YS OUT
7 1/2Vcc
8 PDRIV A
9 PDRIV B
10 PDUMP A
11 PDUMP B
12 LED GND
13 LED 5V
14 FOCUS I C
15 FOCUS O C
16 CAM GND
17 1/2Vcc
18 Y OUT
19 P OUT
20 CAM 5V
21 YDUMP B
22 YDUMP A
23 YDRIV B
24 YDRIV A
V101 17P
1 YDRIV A
2 YDRIV B
3 YDUMP A
4 YDUMP B
5 CAM 5V
6 P OUT
7 Y OUT
8 1/2Vcc
9 CAM GND
10 FOCUS O C
11 FOCUS I C
12 LED 5V
13 LED GND
14 PDUMP B
15 PDUMP A
16 PDRIV B
17 PDRIV A
TO CS BOARD (ZOOM LENS UNIT)
(See Page 111)
CN001 24P
VD-21 BOARD
IC001 (A-6) P DRIVE
IC001 RC3414M-T1
IC002 (A-10) ⑧ ⑨ ⑩ ⑫ ⑬ ⑭ 1/2 Vcc BUFFER ① ② ③ P BUFFER ⑤ ⑥ ⑦ Y BUFFER
IC002 LM324
IC003 (A-9) ① ② ③ P LPF ⑤ ⑥ ⑦ P AMP ⑫ ⑬ ⑭ Y LPF ⑧ ⑨ ⑩ Y AMP
IC003 NJM3403
IC004 (A-5) Y DRIVE
IC004 RC3414M-T1
IC005 (B-11) D/A, A/D CONVERTER
IC005 MC145053
IC006 (B-2) VAP CONTROL
IC006 CXP-80624
IC007 (A-13) VM LOCK DRIVE
IC007 MM1038XFF
Q001 LED DRIVE
Q001 DTA114EU
Q002, 003 CURRENT LIMITER
Q002 XN6401
Q003 UN5213-TX
X001
RESET
GND
VDD
Vpp
CAM SCK
CAM SO
CAM SI
VAP CS
EXTAL
XTAL
VAP RESET
MP
P PWM
Y PWM
Y ON
A VDD
AV REF
A VSS
VAP EOC
VAP SIN
VAP SOUT
VAP SCK
VAP CS
VAP LOCK -
VAP LOCK +
VM LOCK
CN002 12P
1 VAP CS
2 CAM SCK
3 VAP 5V
4 CAM SI
5 VAP GND
6 CAM SO
7 VAP RESET
8 MF LED
9 D 5V
10 FOCUS I C
11 D GND
12 FOCUS O C
TO VC-103 BOARD (2/4) W701
(See Page 106)
CN003 4P
4 D GND
3 VM LOCK
2 VM LOCK -
1 VM LOCK +
(ZOOM LENS UNIT)
VM LOCK
no mark : CAMERA REC mode

< DIODE >

D071	8-719-404-46	DIODE	MA110
D072	8-719-800-76	DIODE	1SS226
D073	8-719-404-46	DIODE	MA110
D301	8-719-404-35	DIODE	MA141WK
D302	8-719-404-35	DIODE	MA141WK
D303	8-719-420-14	DIODE	MA8082-M
D304	8-719-404-46	DIODE	MA110
D305	8-719-404-46	DIODE	MA110
D306	8-719-420-14	DIODE	MA8082-M
D307	8-719-420-14	DIODE	MA8082-M
D308	8-719-420-14	DIODE	MA8082-M
D309	8-719-420-14	DIODE	MA8082-M
D402	8-719-404-35	DIODE	MA141WK
D403	8-719-820-05	DIODE	1SS181
D404	8-719-820-05	DIODE	1SS181
D405	8-719-404-46	DIODE	MA110
D407	8-719-404-46	DIODE	MA110
D408	8-719-404-46	DIODE	MA110
D409	8-719-404-46	DIODE	MA110
D551	8-719-404-46	DIODE	MA110
D552	8-719-404-35	DIODE	MA141WK
D553	8-719-404-46	DIODE	MA110

< IC >

IC001	8-759-057-58	IC	CXA1555R
IC071	8-752-058-02	IC	CXA1509AR
IC072	8-759-009-10	IC	MC14069UBG
IC151	8-759-057-81	IC	MPC1727VM
IC152	8-759-823-90	IC	LB8110M
IC153	8-752-836-11	IC	CXP80624-266Q
IC154	8-759-057-77	IC	MCD004BN
IC155	8-759-243-19	IC	TC7SU04F
IC156	8-759-057-74	IC	MCD002AR
IC157	8-759-512-42	IC	CXA1481R
IC261	8-752-010-20	IC	CX20102
IC262	8-759-067-54	IC	CXD2120Q
IC301	8-759-038-83	IC	MC13400FU
IC303	8-759-061-70	IC	MB86168PFV
IC304	8-759-064-36	IC	MB88346BPFV
IC305	8-759-064-36	IC	MB88346BPFV
IC306	8-759-064-36	IC	MB88346BPFV
IC401	8-752-036-19	IC	CXA1207R
IC402	8-759-636-33	IC	CXA1452
IC403	8-752-053-21	IC	CXA1211M
IC501	8-752-036-20	IC	CXA1208R
IC503	8-752-053-21	IC	CXA1211M
IC551	8-752-332-68	IC	CXL5502M
IC552	8-752-332-68	IC	CXL5502M

< TRANSISTOR >

Q001	8-729-140-63	TRANSISTOR	2SA1611-M5M6
Q002	8-729-140-63	TRANSISTOR	2SA1611-M5M6
Q003	8-729-216-22	TRANSISTOR	2SA1162
Q005	8-729-013-04	TRANSISTOR	2SC4851
Q006	8-729-013-04	TRANSISTOR	2SC4851
Q007	8-729-013-04	TRANSISTOR	2SC4851
Q008	8-729-013-04	TRANSISTOR	2SC4851
Q010	8-729-905-12	TRANSISTOR	DTA144EU
Q011	8-729-905-12	TRANSISTOR	DTA144EU
Q012	8-729-905-12	TRANSISTOR	DTA144EU
Q013	8-729-905-12	TRANSISTOR	DTA144EU
Q014	8-729-904-07	TRANSISTOR	FMG2
Q015	8-729-904-07	TRANSISTOR	FMG2
Q016	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q017	8-729-905-23	TRANSISTOR	2SA1576-R
Q018	8-729-905-12	TRANSISTOR	DTA144EU
Q071	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q072	8-729-140-63	TRANSISTOR	2SA1611-M5M6
Q073	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q075	8-729-905-18	TRANSISTOR	DTC144EU
Q076	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q077	8-729-905-18	TRANSISTOR	DTC144EU
Q078	8-729-905-18	TRANSISTOR	DTC144EU
Q079	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q080	8-729-012-50	TRANSISTOR	2SC4400-3/4/5
Q081	8-729-140-63	TRANSISTOR	2SA1611-M5M6
Q082	8-729-905-18	TRANSISTOR	DTC144EU
Q084	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q085	8-729-420-12	TRANSISTOR	XN4213
Q086	8-729-012-50	TRANSISTOR	2SC4400-3/4/5
Q087	8-729-905-12	TRANSISTOR	DTA144EU
Q088	8-729-140-63	TRANSISTOR	2SA1611-M5M6
Q089	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q091	8-729-905-12	TRANSISTOR	DTA144EU
Q092	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q151	8-729-907-00	TRANSISTOR	DTC114EU
Q261	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q262	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q263	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q264	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q265	8-729-905-23	TRANSISTOR	2SA1576-R
Q302	8-729-905-23	TRANSISTOR	2SA1576-R
Q304	8-729-423-52	TRANSISTOR	2SC3931-C
Q306	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q307	8-729-905-23	TRANSISTOR	2SA1576-R
Q309	8-729-905-18	TRANSISTOR	DTC144EU
Q310	8-729-905-18	TRANSISTOR	DTC144EU
Q313	8-729-402-78	TRANSISTOR	XN6401
Q314	8-729-106-60	TRANSISTOR	2SB1115A-YQ
Q315	8-729-905-23	TRANSISTOR	2SA1576-R
Q316	8-729-905-18	TRANSISTOR	DTC144EU
Q404	8-729-905-18	TRANSISTOR	DTC144EU
Q405	8-729-824-05	TRANSISTOR	3SK248
Q409	8-729-905-09	TRANSISTOR	DTA144WU
Q410	8-729-402-78	TRANSISTOR	XN6401
Q411	8-729-403-06	TRANSISTOR	XN1113
Q412	8-729-905-18	TRANSISTOR	DTC144EU
Q413	8-729-905-18	TRANSISTOR	DTC144EU
Q414	8-729-423-52	TRANSISTOR	2SC3931-C
Q415	8-729-824-02	TRANSISTOR	2SA1838
Q417	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q420	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q421	8-729-905-18	TRANSISTOR	DTC144EU
Q422	8-729-823-16	TRANSISTOR	2SC4555-5. 6. 7
Q423	8-729-823-16	TRANSISTOR	2SC4555-5. 6. 7
Q424	8-729-905-18	TRANSISTOR	DTC144EU
Q425	8-729-421-90	TRANSISTOR	XN4113
Q426	8-729-117-73	TRANSISTOR	2SC4178-F14
Q429	8-729-905-18	TRANSISTOR	DTC144EU
Q430	8-729-423-52	TRANSISTOR	2SC3931-C
Q431	8-729-423-52	TRANSISTOR	2SC3931-C
Q432	8-729-402-81	TRANSISTOR	XN4501
Q433	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q434	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q435	8-729-905-12	TRANSISTOR	DTA144EU
Q437	8-729-905-23	TRANSISTOR	2SA1576-R
Q438	8-729-423-52	TRANSISTOR	2SC3931-C
Q439	8-729-920-XX	TRANSISTOR	DTA114EU
Q440	8-729-905-23	TRANSISTOR	2SA1576-R
Q441	8-729-905-23	TRANSISTOR	2SA1576-R
Q443	8-729-905-18	TRANSISTOR	DTC144EU
Q501	8-729-117-73	TRANSISTOR	2SC4178-F14
Q503	8-729-905-18	TRANSISTOR	DTC144EU
Q505	8-729-905-23	TRANSISTOR	2SA1576-R
Q506	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q507	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q508	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q509	8-729-905-12	TRANSISTOR	DTA144EU
Q510	8-729-423-52	TRANSISTOR	2SC3931-C
Q511	8-729-905-18	TRANSISTOR	DTC144EU
Q513	8-729-905-18	TRANSISTOR	DTC144EU
Q514	8-729-905-18	TRANSISTOR	DTC144EU
Q515	8-729-905-18	TRANSISTOR	DTC144EU
Q516	8-729-905-18	TRANSISTOR	DTC144EU
Q551	8-729-807-87	TRANSISTOR	2SB1295-UL6
Q552	8-729-905-18	TRANSISTOR	DTC144EU
Q553	8-729-807-87	TRANSISTOR	2SB1295-UL6
Q554	8-729-905-18	TRANSISTOR	DTC144EU
Q555	8-729-905-23	TRANSISTOR	2SA1576-R
Q556	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q557	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q558	8-729-905-18	TRANSISTOR	DTC144EU
Q559	8-729-905-23	TRANSISTOR	2SA1576-R
Q560	8-729-120-28	TRANSISTOR	2SC1623-L5L6

VS-84 (VIDEO HEAD AMPLIFIER, VIDEO, SERVO SYSTEM CONTROL, INDEX MARKER) PRINTED WIRING BOARD

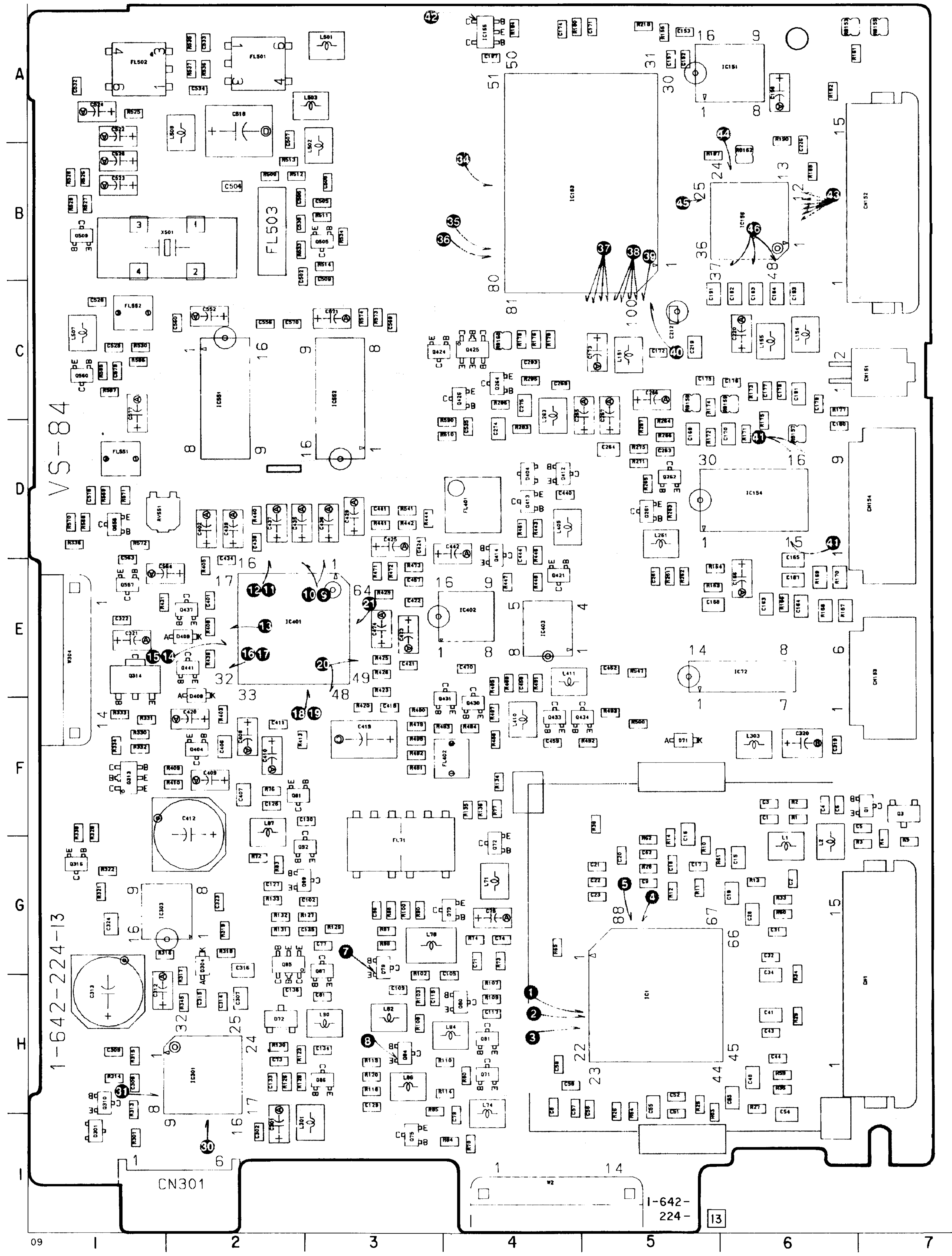
— Ref. No. VS-84 BOARD: 3000 series —

- **For printed wiring boards.**
- VS-84 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

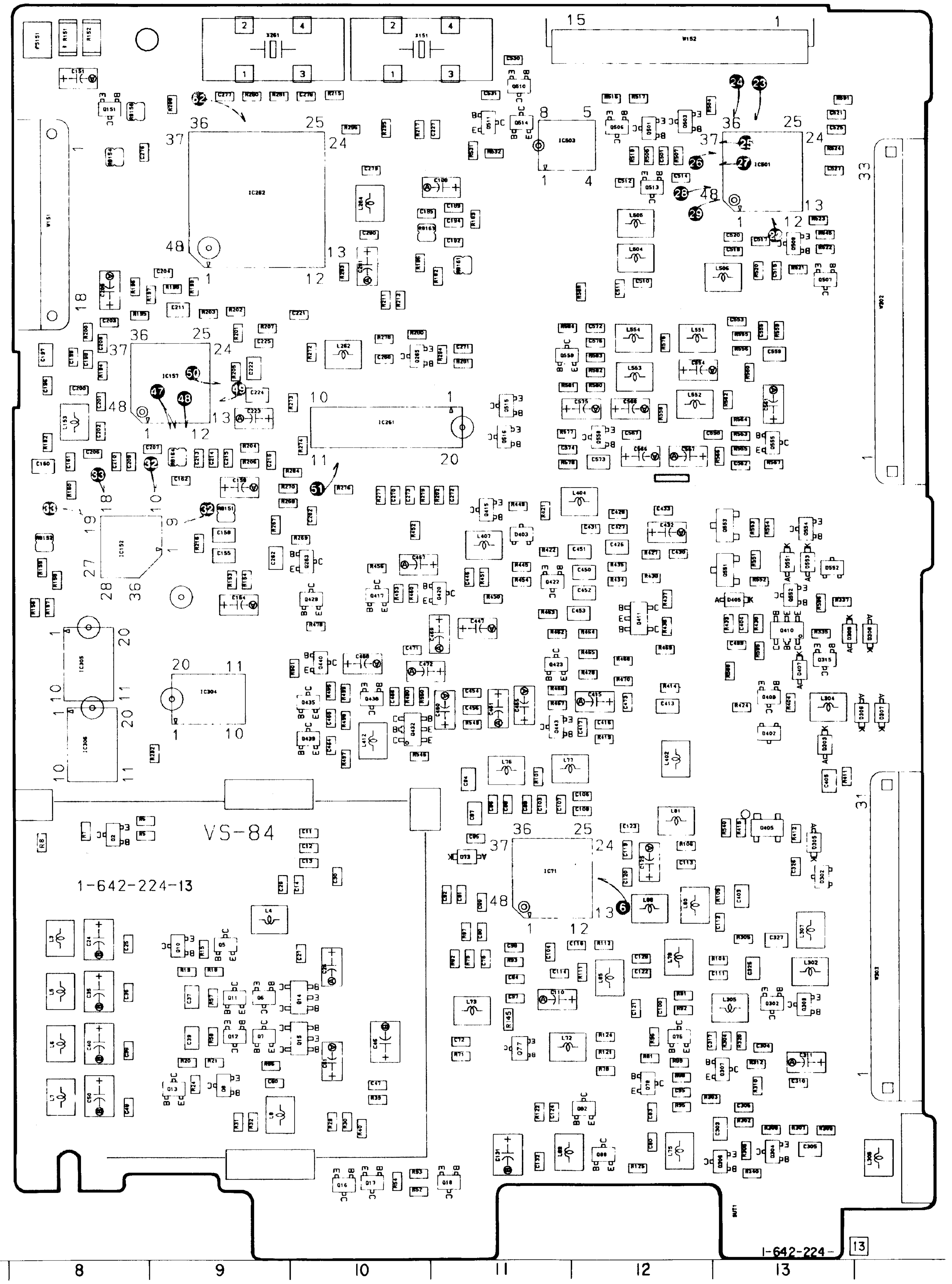
Caution:

Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

VS-84 BOARD (COMPONENT SIDE)

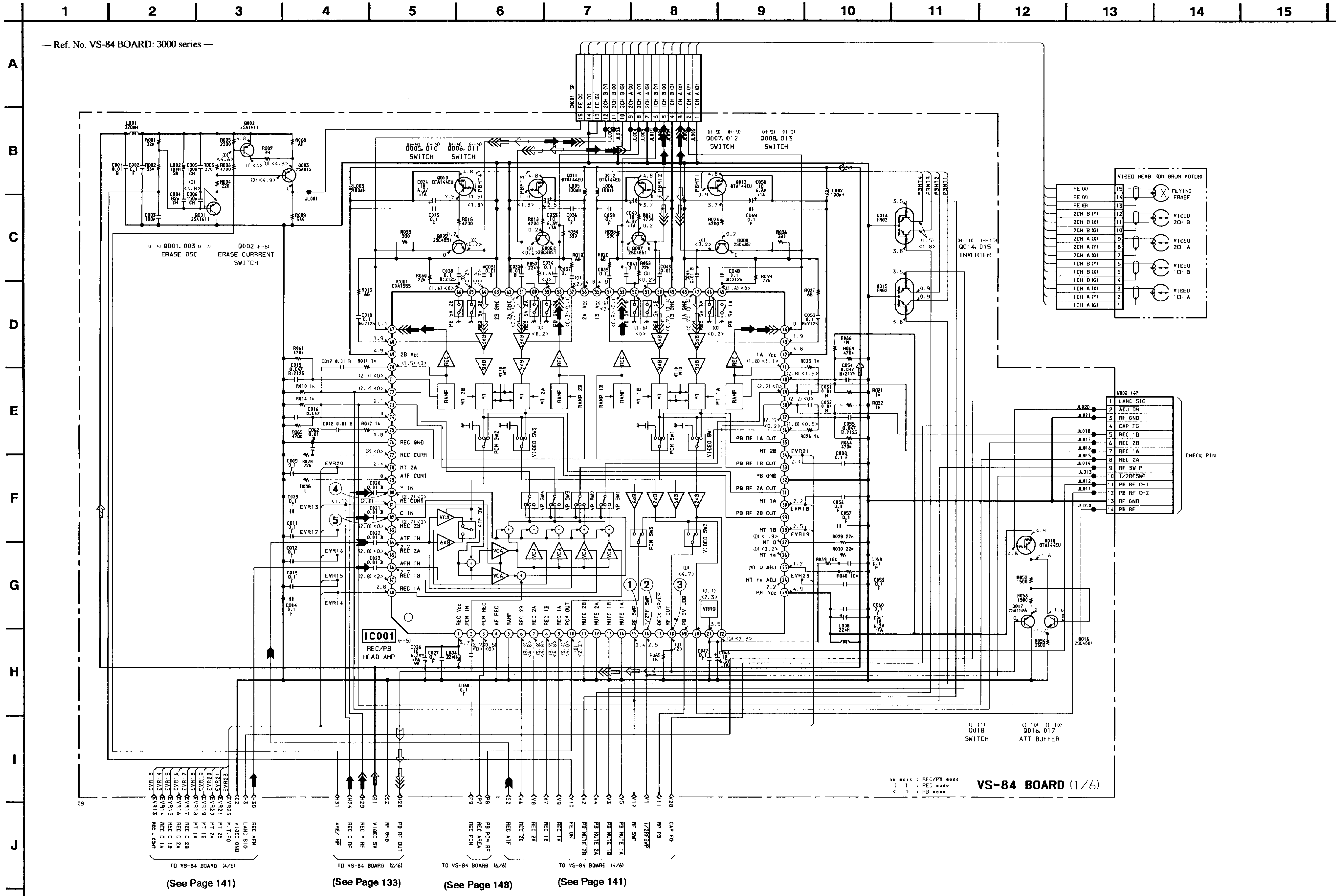


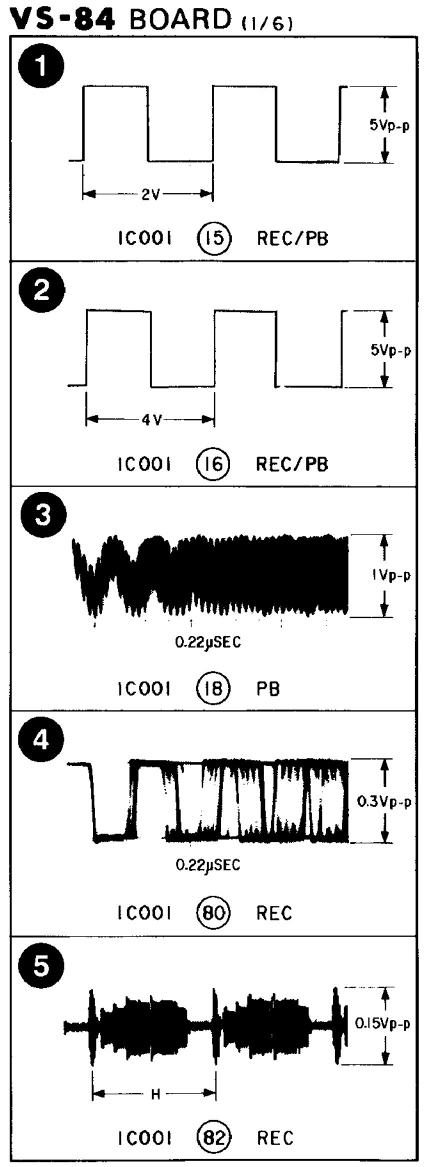
VS-84 BOARD (CONDUCTOR SIDE)



VS-84 (VIDEO HEAD AMPLIFIER) SCHEMATIC DIAGRAM

- Refer to page 126 for Printed Wiring Board.


— Ref. No. VS-84 BOARD: 3000 series —
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
A B C D E F G H I J
Q001, 003 ERASE OSC
Q002 ERASE CURRENT SWITCH
Q005, 010 SWITCH
Q006, 011 SWITCH
Q007, 012 SWITCH
Q008, 013 SWITCH
Q014, 015 INVERTER
Q018 SWITCH
Q016, 017 ATT BUFFER
IC001 REC/PB HEAD AMP
CN001 15P
VIDEO HEAD (ON DRUM MOTOR)
FLYING ERASE
VIDEO 2CH B
VIDEO 2CH A
VIDEO 1CH B
VIDEO 1CH A
W002 14P
CHECK PIN
LANC SIG
AGJ ON
RF GND
CAP FG
REC 1B
REC 2B
REC 1A
REC 2A
RF SW P
T/2RF SWP
PB RF CH1
PB RF CH2
RF GND
PB RF
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
VS-84 BOARD (1/6)
TO VS-84 BOARD (4/6)
(See Page 141)
TO VS-84 BOARD (2/6)
(See Page 133)
TO VS-84 BOARD (6/6)
(See Page 148)
TO VS-84 BOARD (4/6)
(See Page 141)



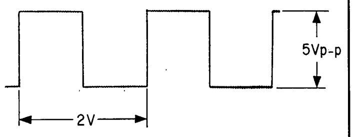
- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡≫	➡⋙	➡
PB			⇨⋙	⇨

	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)			
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)			
Ref. signal	➤		▷

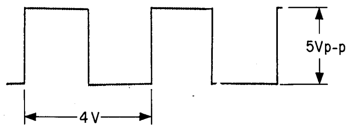
VS-84 BOARD (1/6)

❶



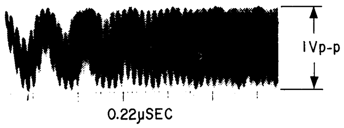
IC001 ⑮ REC/PB

❷



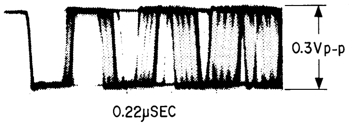
IC001 ⑯ REC/PB

❸



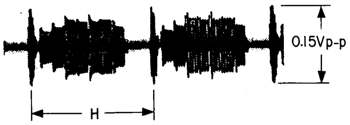
IC001 ⑱ PB

❹



IC001 (80) REC

❺



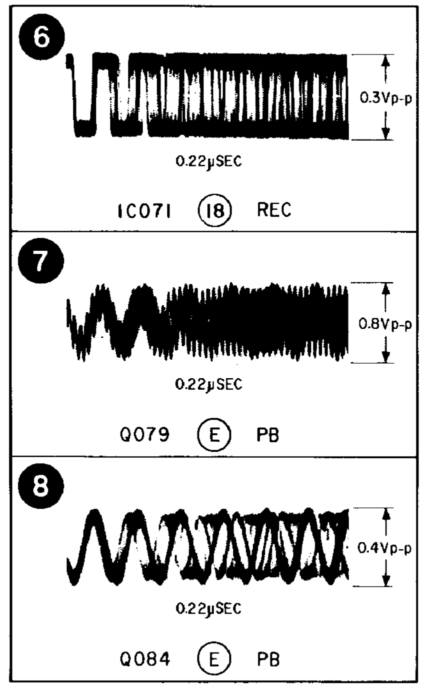
IC001 (82) REC

- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡≫	➡⋙	➡
PB			⇨⋙	⇨

	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)			
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)			
Ref. signal	➤		▷

VS-84 BOARD (2/6)



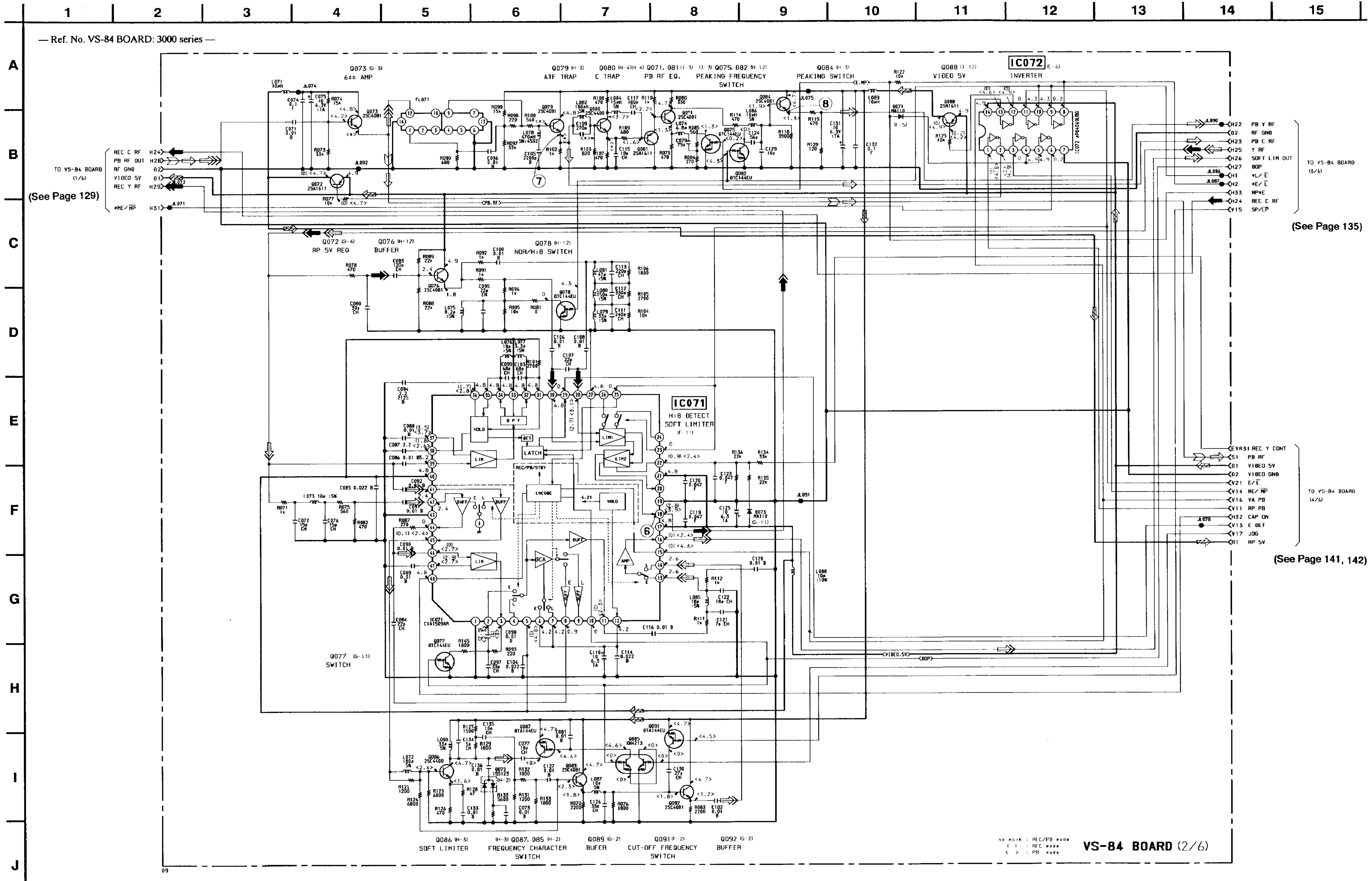
- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡≫		➡
PB	⇨	⇨≫	⇨⋙	⇨

	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)			
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)			
Ref. signal			⊐

VS-84 (VIDEO) SCHEMATIC DIAGRAM

- Refer to page 126 for Printed Wiring Board.


1
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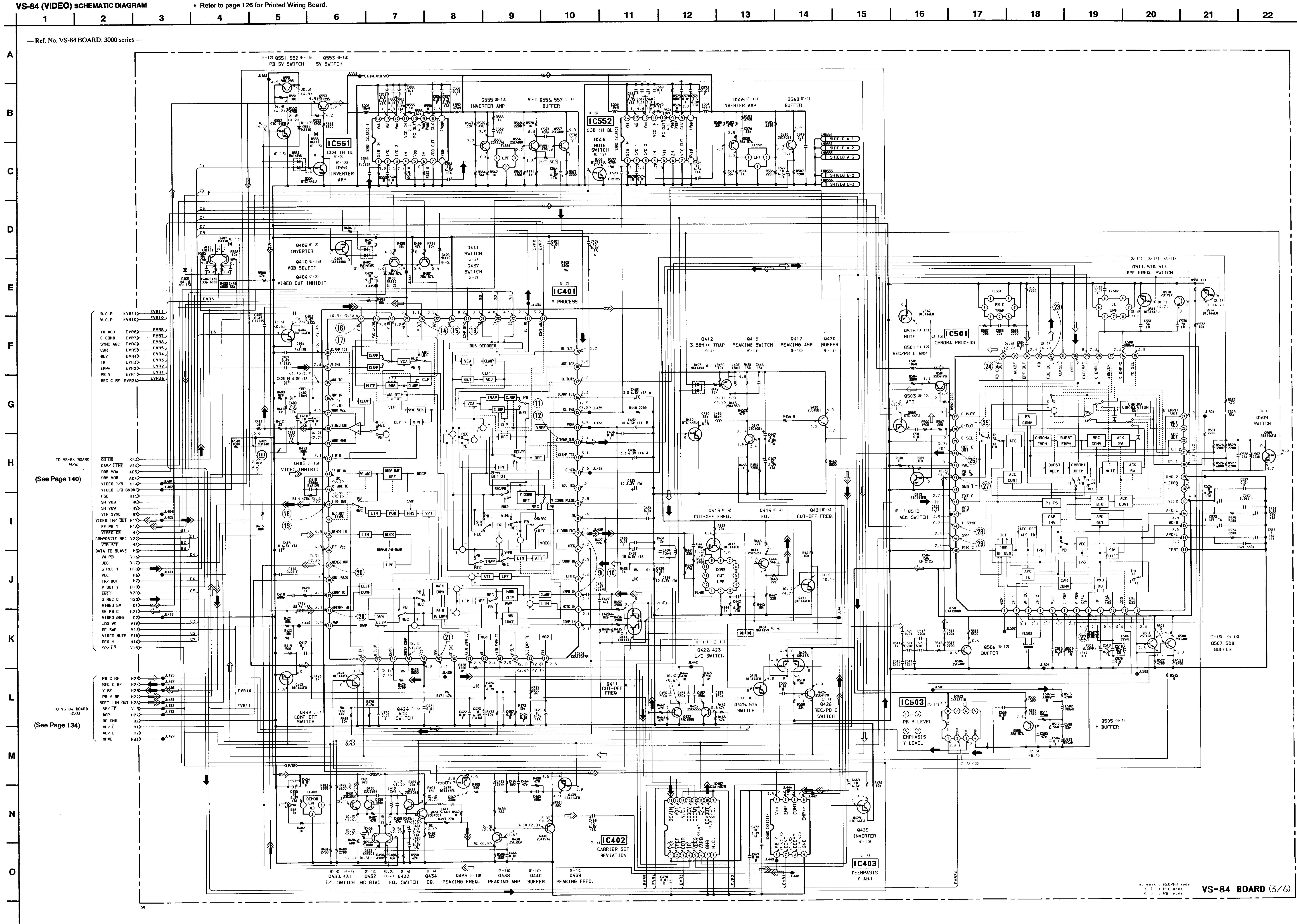
A
B
C
D
E
F
G
H
I
J
— Ref. No. VS-84 BOARD: 3000 series —
TO VS-84 BOARD (1/6)
REC C RF H24
PB RF OUT H28
RF GND Ð2
VIDEO 5V Ð1
REC Y RF H29
*ME/MP H31
(See Page 129)
Q073 (G-3) 6db AMP
Q079 (H-3) ATF TRAP
Q080 (H-4)(H-4) C TRAP
Q071, 081 (I-3) PB RF EQ.
(I-3) Q075, 082 (H-12) PEAKING FREQUENCY SWITCH
Q084 (H-3) PEAKING SWITCH
Q088 (I-12) VIDEO 5V
IC072 (E-6) INVERTER
Q072 (G-4) RP 5V REG
Q076 (H-12) BUFFER
Q078 (H-12) NOR/Hi8 SWITCH
IC071 Hi8 DETECT SOFT LIMITER (F-11)
IC071 CXA1509AR
Q077 (G-11) SWITCH
Q086 (H-3) SOFT LIMITER
(H-3) Q087, 085 (H-2) FREQUENCY CHARACTER SWITCH
Q089 (G-2) BUFER
Q091 (F-2) CUT-OFF FREQUENCY SWITCH
Q092 (G-2) BUFFER
H22 PB Y RF
Ð2 RF GND
H23 PB C RF
H25 Y RF
H26 SOFT LIM OUT
H27 DOP
H1 *L/E
H2 *E/L
H33 MP*E
H24 REC C RF
V15 SP/LP
TO VS-84 BOARD (3/6)
(See Page 135)
EVR31 REC Y CONT
S1 PB RF
Ð1 VIDEO 5V
Ð2 VIDEO GND
V21 E/L
V14 ME/MP
V16 VA PB
V11 RP PB
H32 CAP ON
V13 E DET
V17 JOG
R1 RP 5V
TO VS-84 BOARD (4/6)
(See Page 141, 142)
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
VS-84 BOARD (2/6)

VS-84 (VIDEO) SCHEMATIC DIAGRAM

- Refer to page 126 for Printed Wiring Board.

— Ref. No. VS-84 BOARD: 3000 series —

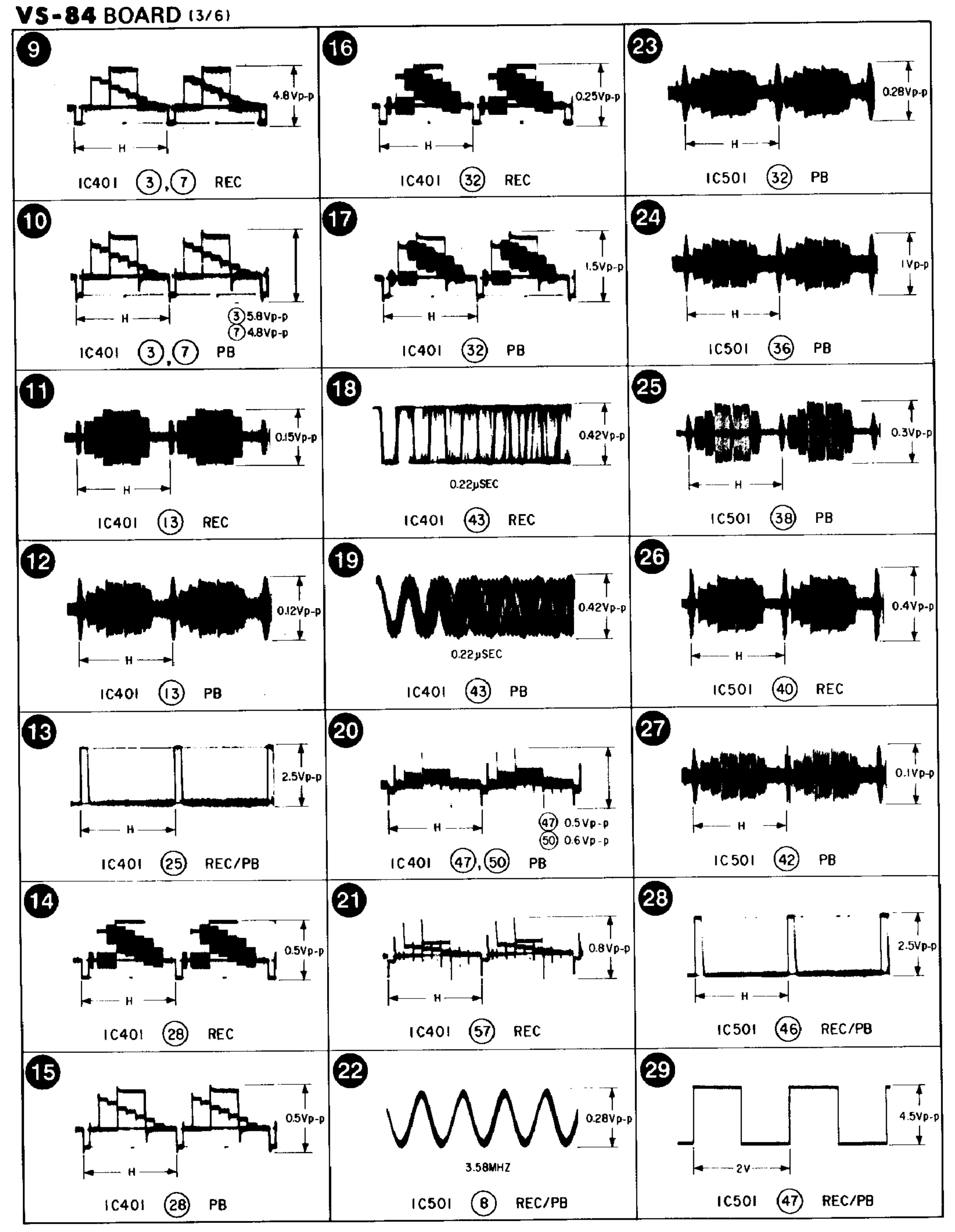


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28
A B C D E F G H I J K L M N O
Q551, 552 PB 5V SWITCH
Q553 5V SWITCH
IC551 CCD 1H DL
Q554 INVERTER AMP
Q555 INVERTER AMP
Q556, 557 BUFFER
IC552 CCD 1H DL
Q558 MUTE SWITCH
Q559 INVERTER AMP
Q560 BUFFER
SHIELD A-1
SHIELD A-2
SHIELD A-3
SHIELD B-2
SHIELD B-3
Q409 INVERTER
Q410 VOB SELECT
Q404 VIDEO OUT INHIBIT
Q441 SWITCH
Q437 SWITCH
IC401 Y PROCESS
Q405 VIDEO INHIBIT
Q412 3.58MHz TRAP
Q415 PEAKING SWITCH
Q417 PEAKING AMP
Q420 BUFFER
Q413 CUT-OFF FREQ.
Q414 EQ.
Q421 CUT-OFF FREQ.
Q411 CUT-OFF FREQ.
Q422, 423 L/E SWITCH
Q425, 515 SWITCH
Q426 REC/PB SWITCH
Q443 COMP OFF SWITCH
Q424 ACK SWITCH
Q511, 510, 514 BPF FREQ. SWITCH
Q516 MUTE
Q501 REC/PB C AMP
IC501 CHROMA PROCESS
Q503 ATT
Q513 ACK SWITCH
Q509 SWITCH
Q506 BUFFER
Q507, 508 BUFFER
IC503
PB Y LEVEL
EMPHASIS
Y LEVEL
Q505 Y BUFFER
IC402 CARRIER SET DEVIATION
IC403 DEEMPHASIS Y ADJ
Q429 INVERTER
Q430, 431 E/L SWITCH
Q432 DC BIAS
Q433 EQ. SWITCH
Q434 EQ.
Q435 PEAKING FREQ.
Q438 PEAKING AMP
Q440 BUFFER
Q439 PEAKING FREQ.
TO VS-84 BOARD (4/6)
(See Page 140)
TO VS-84 BOARD (2/6)
(See Page 134)
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
VS-84 BOARD (3/6)

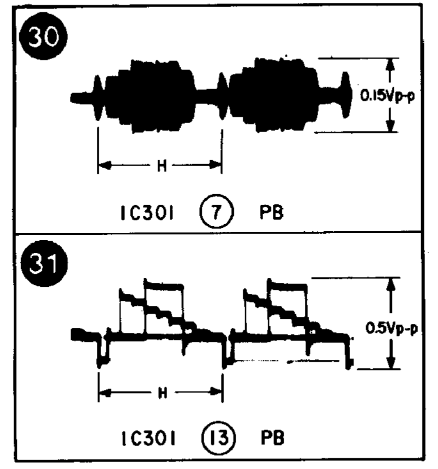
- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡≫	➡≫≫	
PB	⇨	⇨≫		

VS-84 BOARD (3/6)



VS-84 BOARD (4/6)



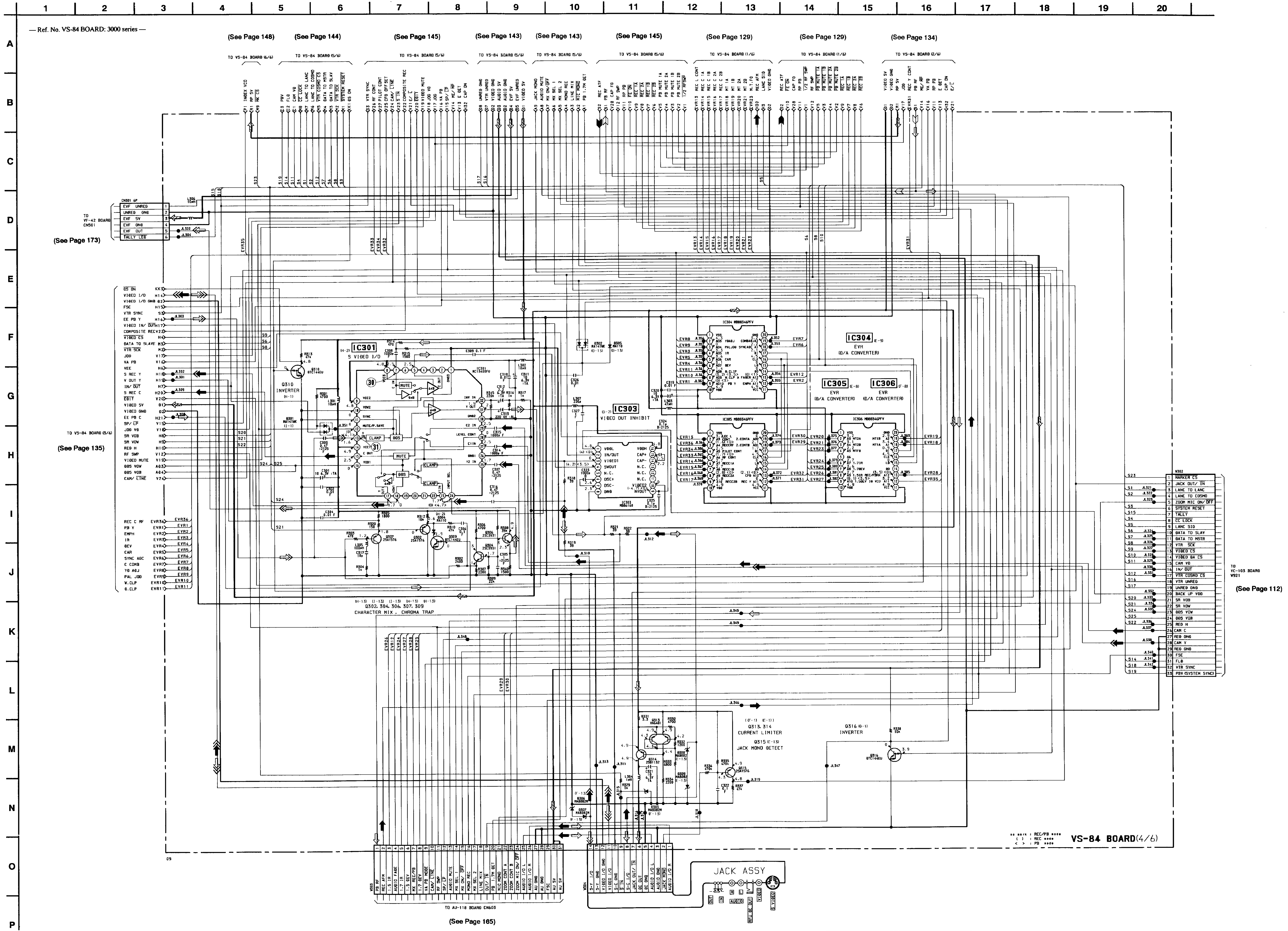
- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡»	➡⋙	➡
PB	⇨	⇨»	⇨⋙	⇨

	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)			
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)			
Ref. signal	➤		▷

VS-84 (VIDEO) SCHEMATIC DIAGRAM

- Refer to page 126 for Printed Wiring Board.

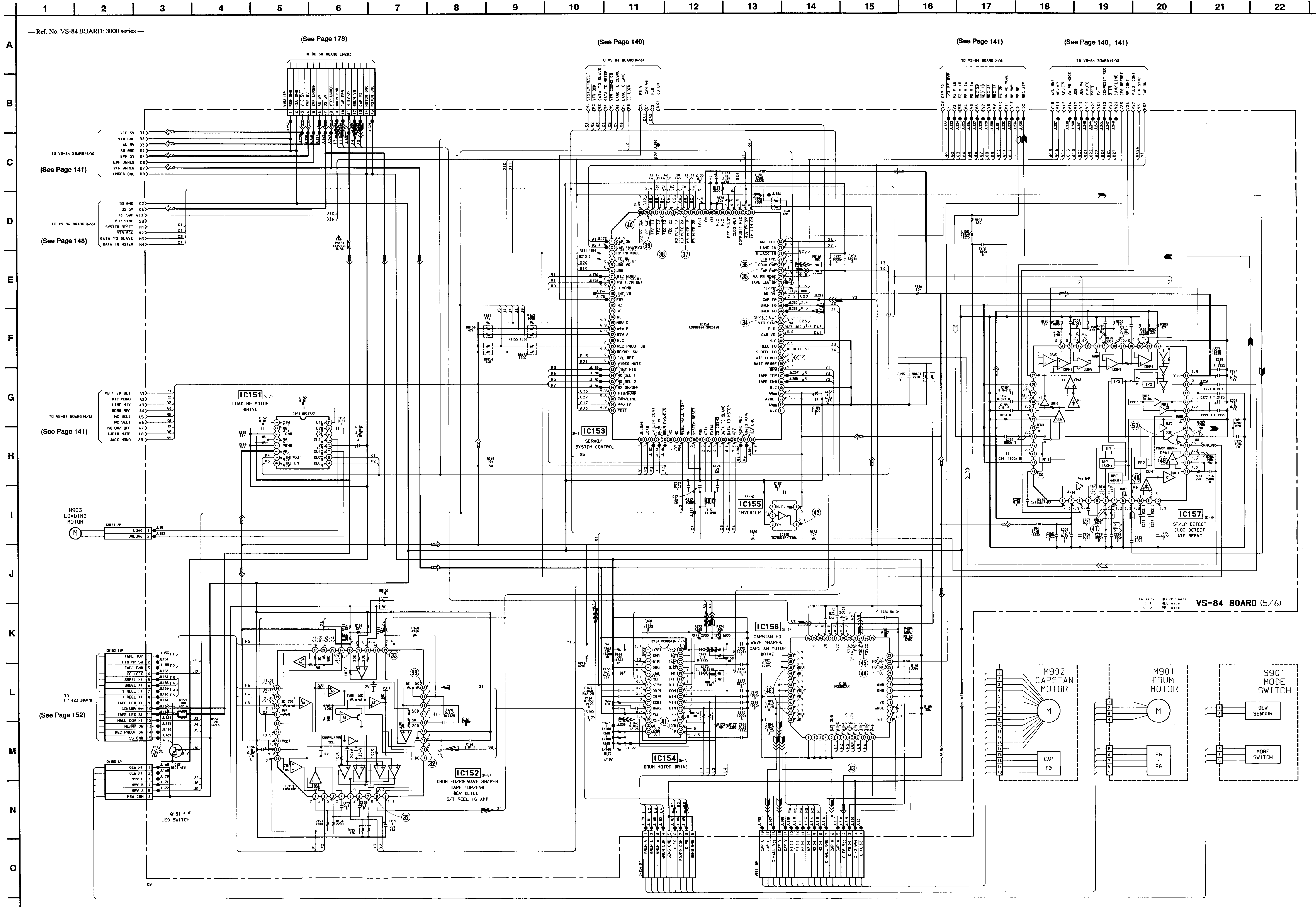


— Ref. No. VS-84 BOARD: 3000 series —
(See Page 148)
TO VS-84 BOARD (6/6)
(See Page 144)
TO VS-84 BOARD (5/6)
(See Page 145)
TO VS-84 BOARD (5/6)
(See Page 143)
TO VS-84 BOARD (5/6)
(See Page 143)
TO VS-84 BOARD (5/6)
(See Page 145)
TO VS-84 BOARD (5/6)
(See Page 129)
TO VS-84 BOARD (1/6)
(See Page 129)
TO VS-84 BOARD (1/6)
(See Page 134)
TO VS-84 BOARD (2/6)
TO VF-42 BOARD CN561
(See Page 173)
TO VS-84 BOARD (3/6)
(See Page 135)
IC301
S VIDEO I/O
Q310
INVERTER
IC303
VIDEO OUT INHIBIT
IC304
EVR
(D/A CONVERTER)
IC305
EVR
(D/A CONVERTER)
IC306
EVR
(D/A CONVERTER)
Q302, 304, 306, 307, 309
CHARACTER MIX, CHROMA TRAP
Q313, 314
CURRENT LIMITER
Q315
JACK MONO DETECT
Q316
INVERTER
TO YC-103 BOARD
(See Page 112)
TO AU-118 BOARD CN603
(See Page 165)
JACK ASSY
OUT
IN
AUDIO
RFU DC OUT
VIDEO
S VIDEO
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
VS-84 BOARD(4/6)

VS-84 (SERVO SYSTEM CONTROL) SCHEMATIC DIAGRAM

- Refer to page 126 for Printed Wiring Board.

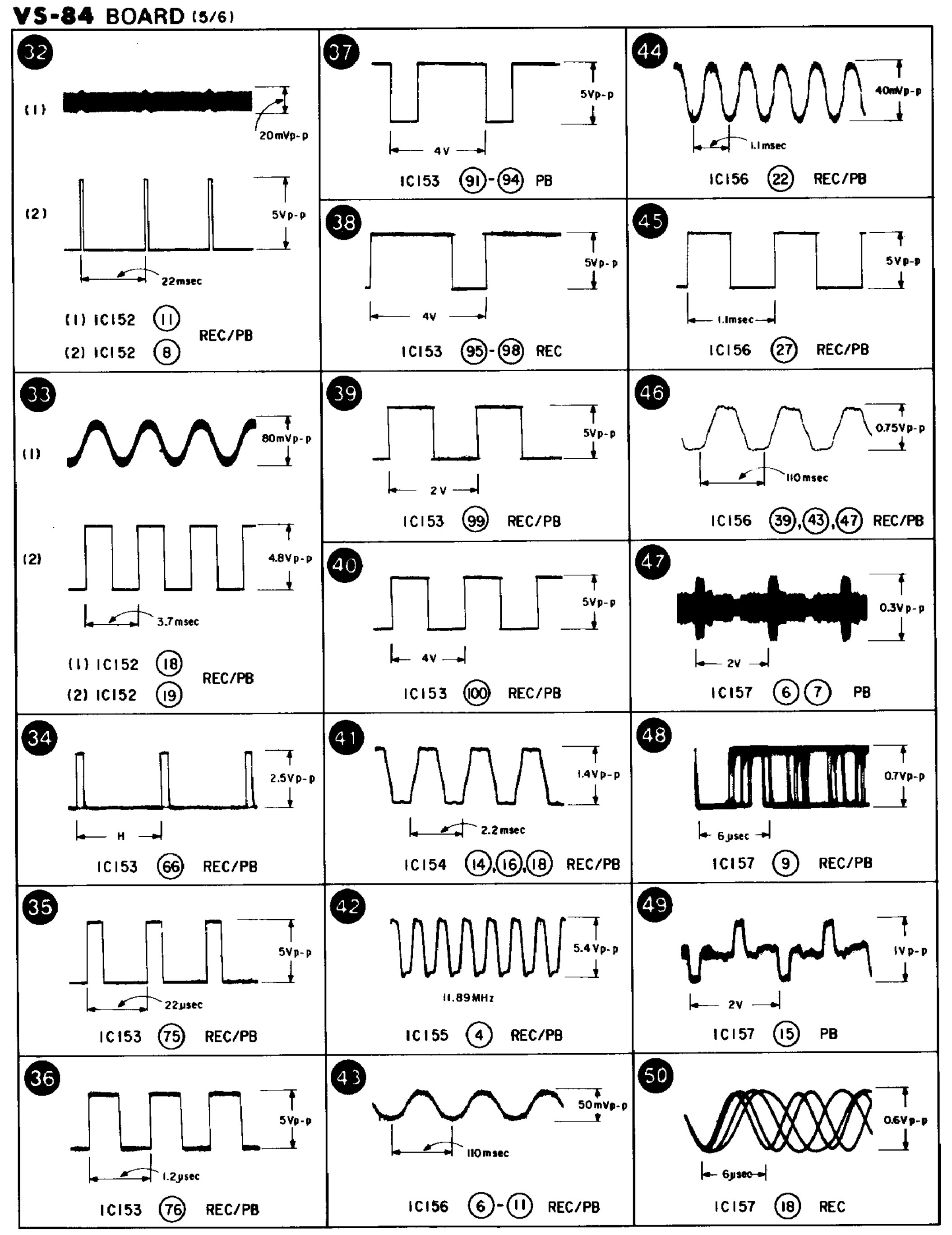
— Ref. No. VS-84 BOARD: 3000 series —


(See Page 178)
TO BD-38 BOARD CN203
(See Page 140)
TO VS-84 BOARD (4/6)
(See Page 141)
(See Page 140, 141)
TO VS-84 BOARD (4/6)
(See Page 141)
TO VS-84 BOARD (4/6)
(See Page 148)
TO VS-84 BOARD (4/6)
(See Page 141)
M903 LOADING MOTOR
TO FP-423 BOARD
(See Page 152)
IC151 LOADING MOTOR DRIVE
IC153 SERVO/SYSTEM CONTROL
IC155 INVERTER
IC157 SP/LP DETECT CLOG DETECT ATF SERVO
IC152 DRUM FG/PG WAVE SHAPER TAPE TOP/END DEW DETECT S/T REEL FG AMP
IC154 DRUM MOTOR DRIVE
IC156 CAPSTAN FG WAVE SHAPER CAPSTAN MOTOR DRIVE
Q151 LED SWITCH
VS-84 BOARD (5/6)
M902 CAPSTAN MOTOR
CAP FG
M901 DRUM MOTOR
FG PG
S901 MODE SWITCH
DEW SENSOR
MODE SWITCH

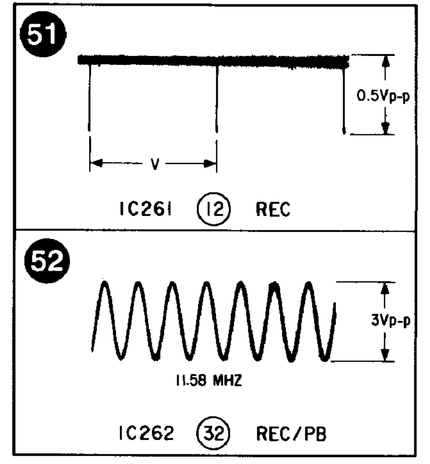
- **SIGNAL PATH**

	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		▷›	
Drum servo (speed and phase)		▷»	
Capstan speed servo			
Capstan phase servo	▶»	▷»	▷»
Capstan servo (speed and phase)		▷»»	
Ref. signal	▶	▷	▷

VS-84 BOARD (5/6)



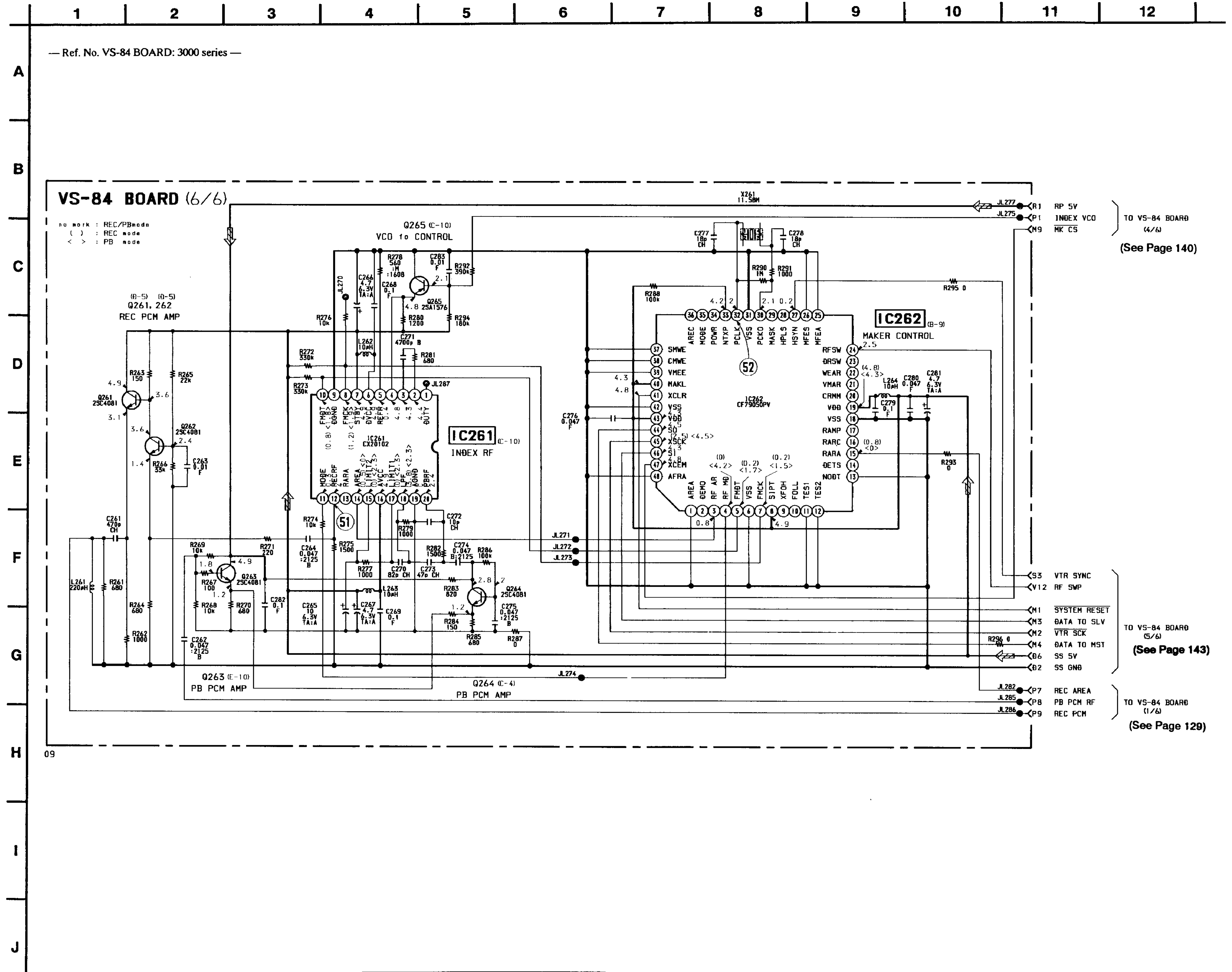
VS-84 BOARD (6/6)



VS-84 (INDEX MARKER) SCHEMATIC DIAGRAM

- Refer to page 128 for Printed Wiring Board.

— Ref. No. VS-84 BOARD: 3000 series —


1
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12
A
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C
D
E
F
G
H
I
J
VS-84 BOARD (6/6)
Q265 VCO to CONTROL
Q261, 262 REC PCM AMP
IC261 INDEX RF
IC262 MAKER CONTROL
Q263 PB PCM AMP
Q264 PB PCM AMP
R1 RP 5V
P1 INDEX VCO
M9 MK CS
TO VS-84 BOARD (4/6)
(See Page 140)
S3 VTR SYNC
V12 RF SWP
M1 SYSTEM RESET
M3 DATA TO SLV
M2 VTR SCK
M4 DATA TO MST
D6 SS 5V
D2 SS GND
TO VS-84 BOARD (5/6)
(See Page 143)
P7 REC AREA
P8 PB PCM RF
P9 REC PCM
TO VS-84 BOARD (1/6)
(See Page 129)
09

FP-423 (TAPE SENSOR, SWITCH) PRINTED WIRING BOARD

— Ref. No. FP-423 BOARD: 4000 series —

< DIODE >

D991 8-719-988-42 DIODE GL453S

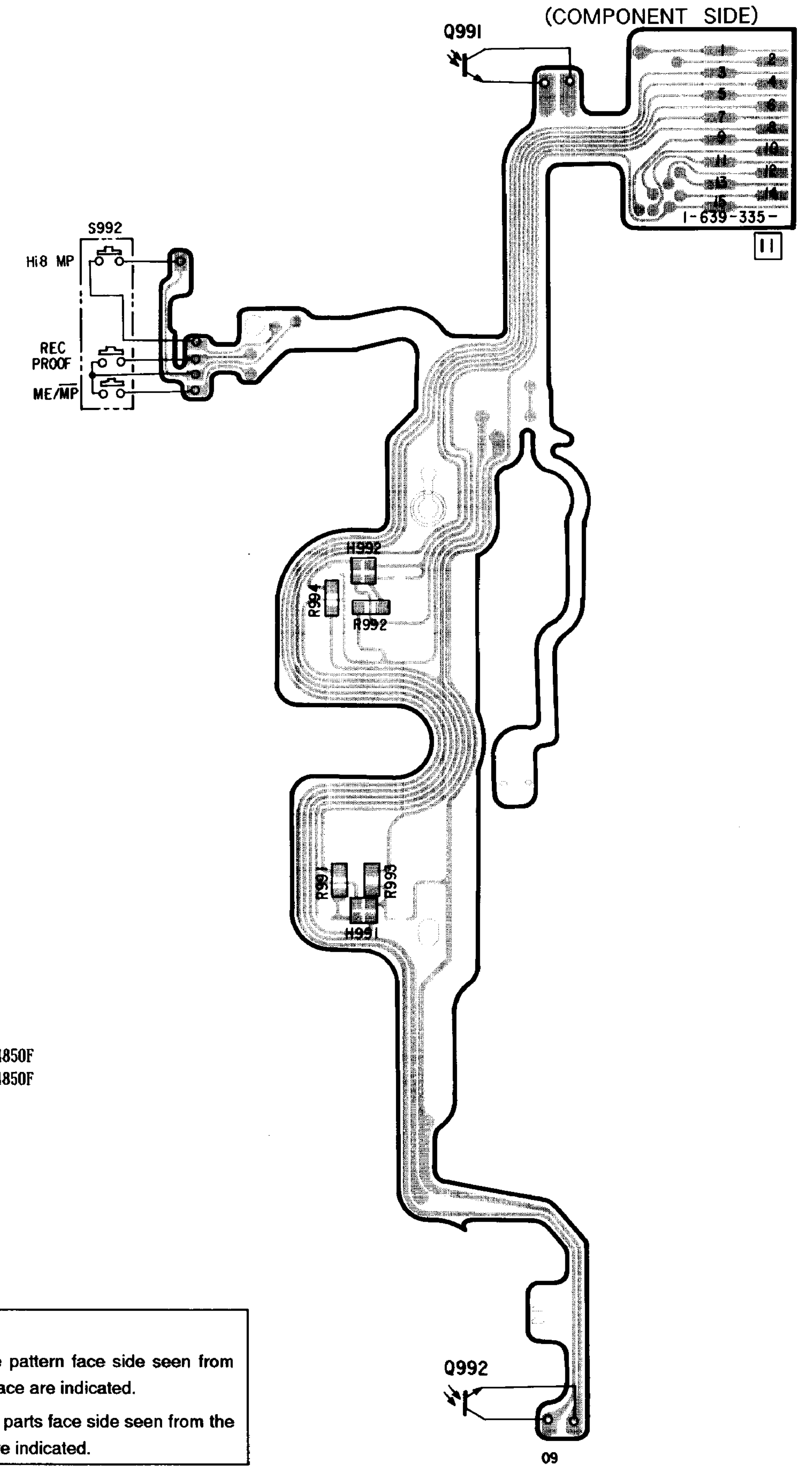
< TRANSISTOR >

Q991 8-729-907-25 TRANSISTOR PT4850F
Q992 8-729-907-25 TRANSISTOR PT4850F

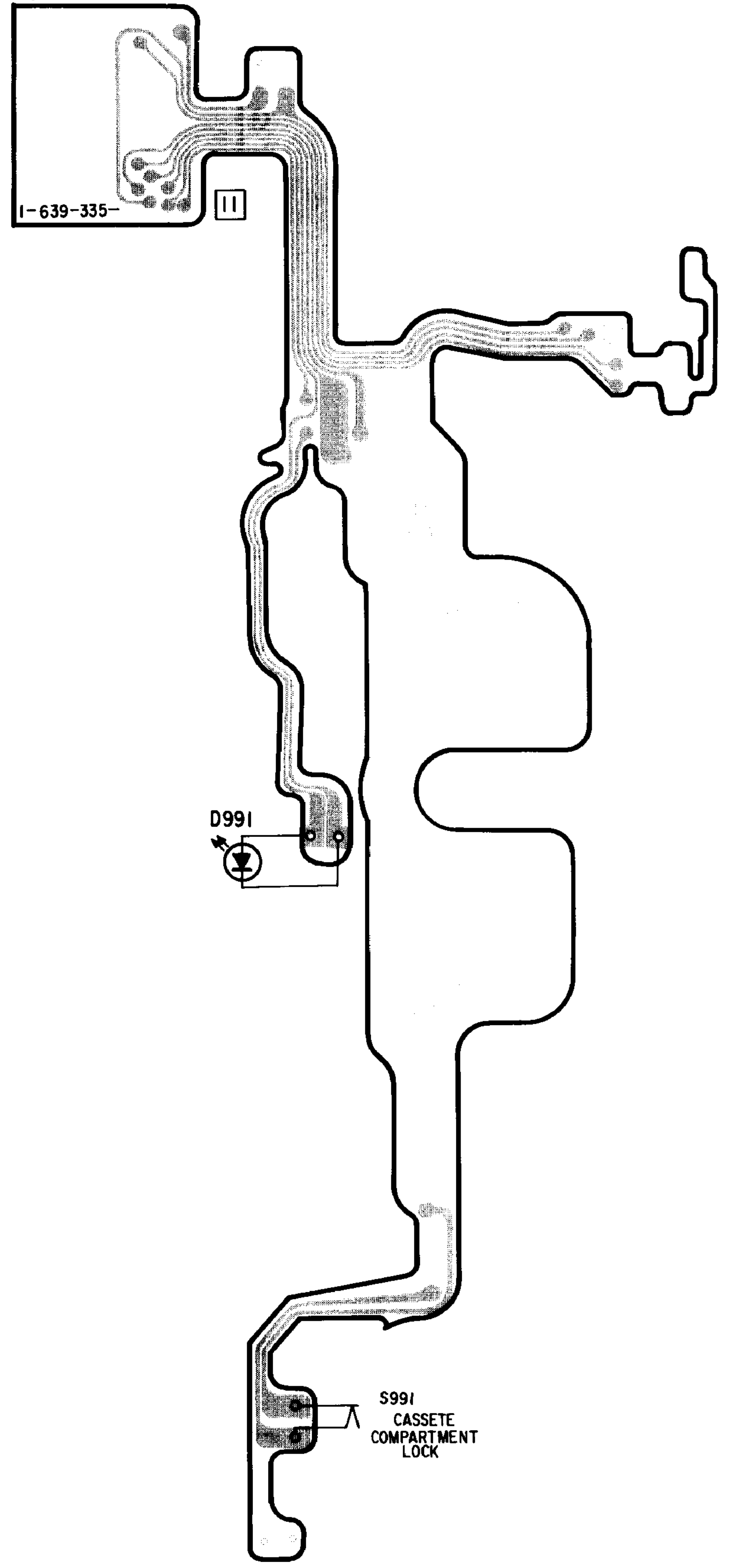
- **For printed wiring boards.**
- ● : Through hole is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

FP-423 FLEXIBLE BOARD
(COMPONENT SIDE)

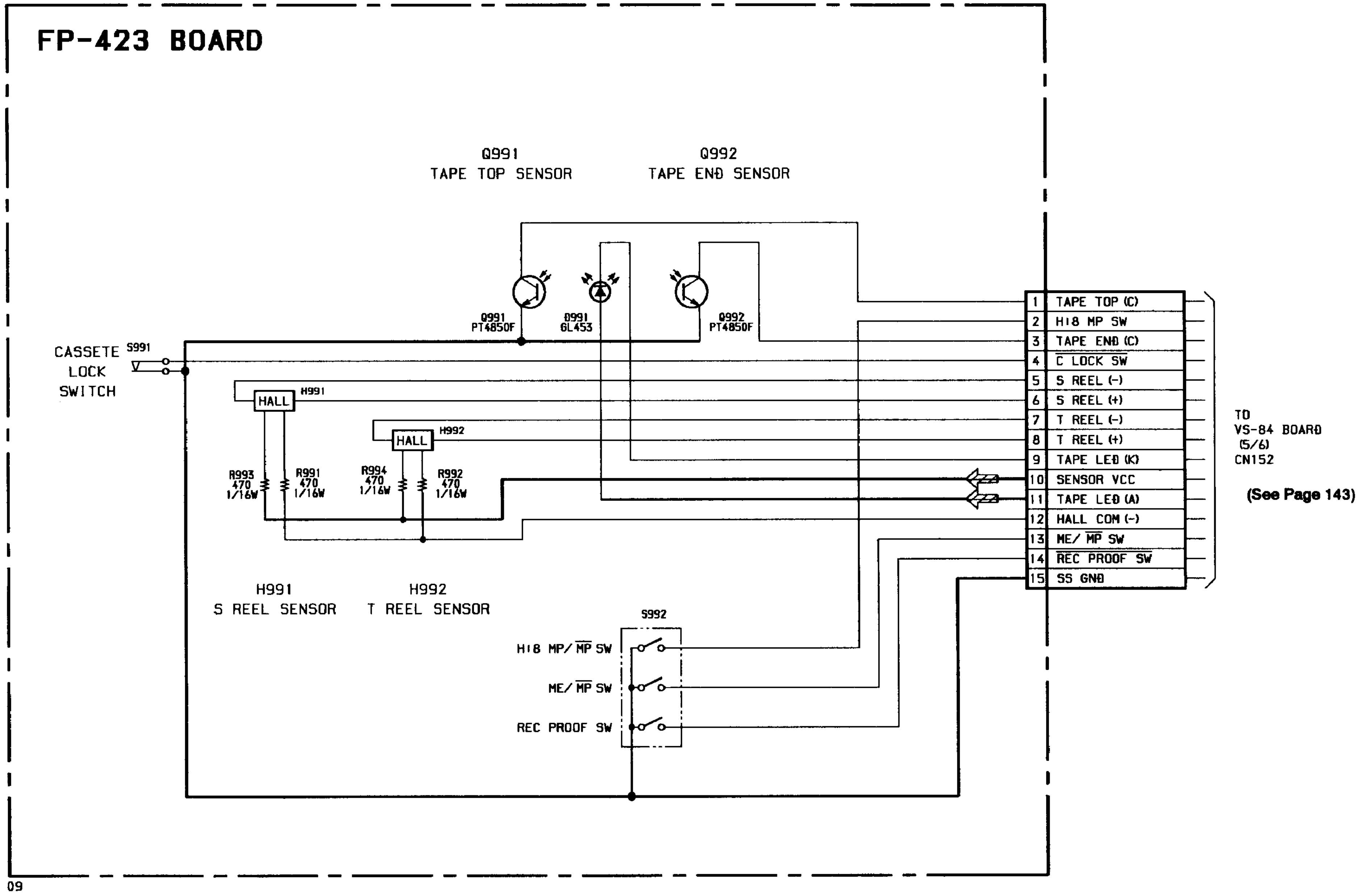

Q991
S992
Hi8 MP
REC PROOF
ME/MP
1-639-335-
11
R992
R994
H992
R991
R993
H991
Q992
09

FP-423 FLEXIBLE BOARD
(CONDUCTOR SIDE)


1-639-335-
11
D991
S991 CASSETE COMPARTMENT LOCK

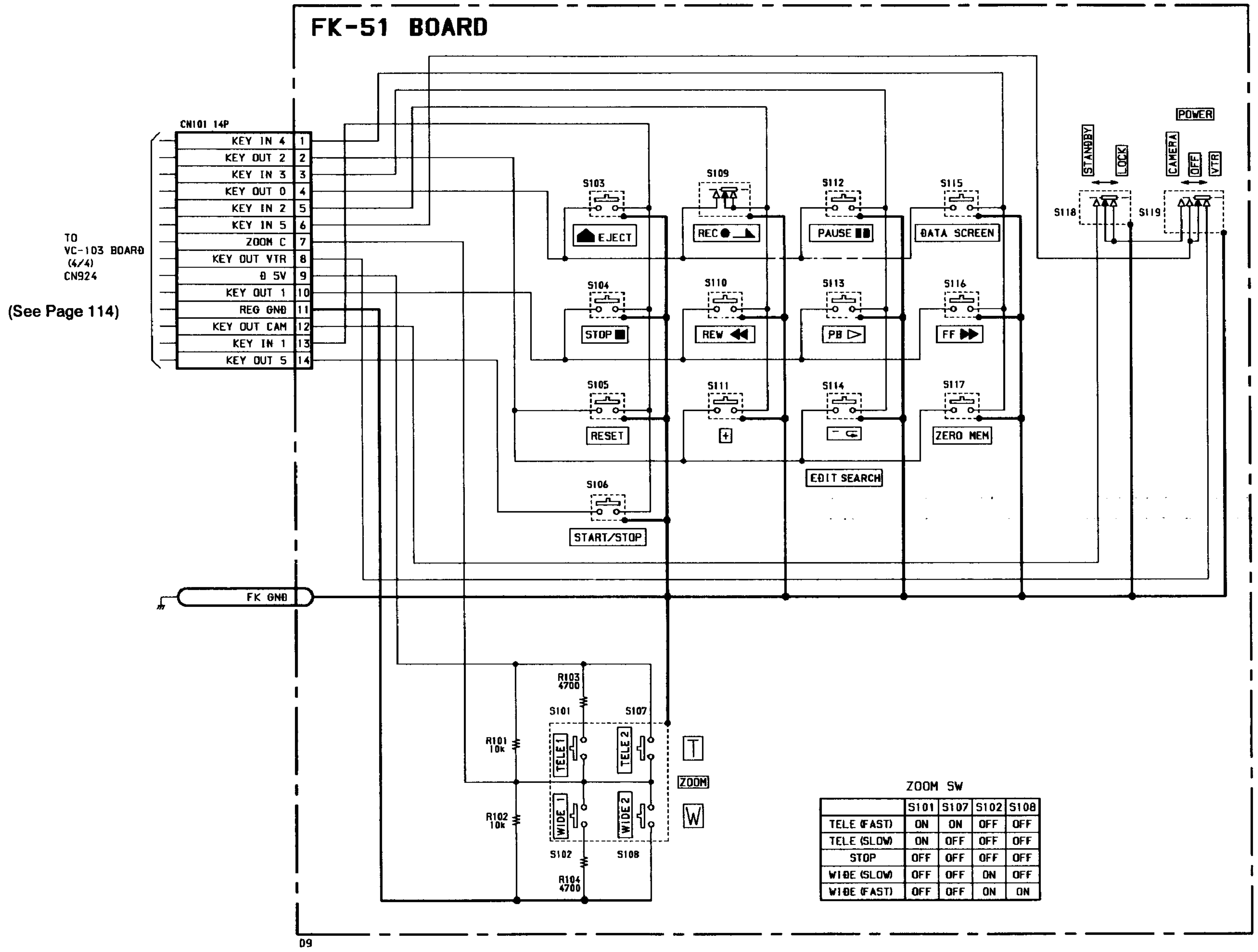
FP-423 (TAPE SENSOR, SWITCH) SCHEMATIC DIAGRAM

— Ref. No. FP-423 BOARD: 4000 series —


FP-423 BOARD
Q991
TAPE TOP SENSOR
Q992
TAPE END SENSOR
Q991
PT4850F
D991
GL453
Q992
PT4850F
CASSETE
LOCK
SWITCH
S991
HALL
H991
HALL
H992
R993
470
1/16W
R991
470
1/16W
R994
470
1/16W
R992
470
1/16W
H991
S REEL SENSOR
H992
T REEL SENSOR
S992
H18 MP/ $\overline{MP}$ SW
ME/ $\overline{MP}$ SW
REC PROOF SW
1 TAPE TOP (C)
2 H18 MP SW
3 TAPE END (C)
4 $\overline{C\ LOCK\ SW}$
5 S REEL (-)
6 S REEL (+)
7 T REEL (-)
8 T REEL (+)
9 TAPE LED (K)
10 SENSOR VCC
11 TAPE LED (A)
12 HALL COM (-)
13 ME/ $\overline{MP}$ SW
14 $\overline{REC\ PROOF\ SW}$
15 SS GND
TO
VS-84 BOARD
(5/6)
CN152
(See Page 143)
09

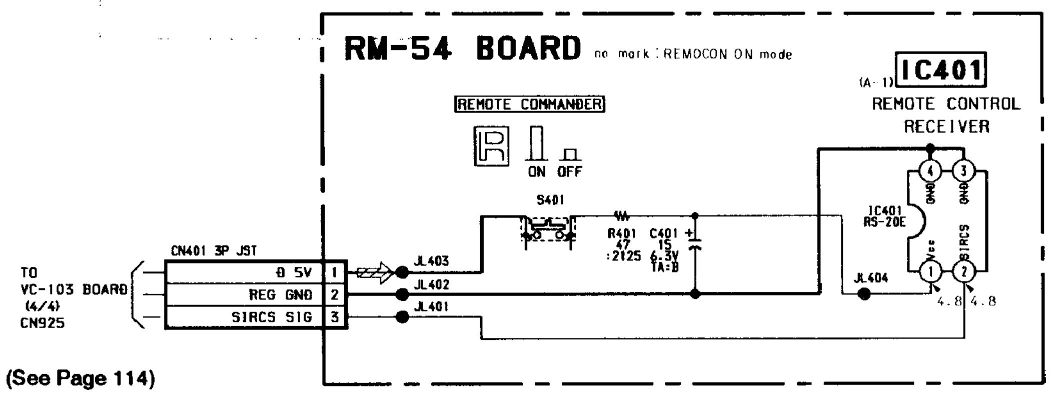
FK-51 (VIDEO FUNCTION SWITCH), RM-54 (REMOTE CONTROL RECEIVER) SCHEMATIC DIAGRAMS

— Ref. No. RM-54 BOARD: 4000 series —


FK-51 BOARD
CN101 14P
KEY IN 4 1
KEY OUT 2 2
KEY IN 3 3
KEY OUT 0 4
KEY IN 2 5
KEY IN 5 6
ZOOM C 7
KEY OUT VTR 8
Ð 5V 9
KEY OUT 1 10
REG GNÐ 11
KEY OUT CAM 12
KEY IN 1 13
KEY OUT 5 14
TO
VC-103 BOARÐ
(4/4)
CN924
(See Page 114)
S103
EJECT
S109
REC ●
S112
PAUSE
S115
ÐATA SCREEN
S104
STOP
S110
REW
S113
PB
S116
FF
S105
RESET
S111
+
S114
EÐIT SEARCH
S117
ZERO MEM
S106
START/STOP
STANÐBY
LOCK
S118
POWER
CAMERA
OFF
VTR
S119
FK GNÐ
R103
4700
S101
S107
R101
10k
TELE 1
TELE 2
T
ZOOM
W
R102
10k
WIDE 1
WIDE 2
S102
S108
R104
4700
Ð9

ZOOM SW

	S101	S107	S102	S108
TELE (FAST)	ON	ON	OFF	OFF
TELE (SLOW)	ON	OFF	OFF	OFF
STOP	OFF	OFF	OFF	OFF
WIÐE (SLOW)	OFF	OFF	ON	OFF
WIÐE (FAST)	OFF	OFF	ON	ON


RM-54 BOARD
no mark : REMOCON ON mode
(A-1)
IC401
REMOTE CONTROL
RECEIVER
REMOTE COMMANÐER
ON
OFF
S401
R401
47
:2125
C401
15
6.3V
TA:B
IC401
RS-20E
GNÐ
GNÐ
Vcc
SIRCS
4.8
4.8
CN401 3P JST
Ð 5V 1
REG GNÐ 2
SIRCS SIG 3
JL403
JL402
JL401
JL404
TO
VC-103 BOARÐ
(4/4)
CN925
(See Page 114)

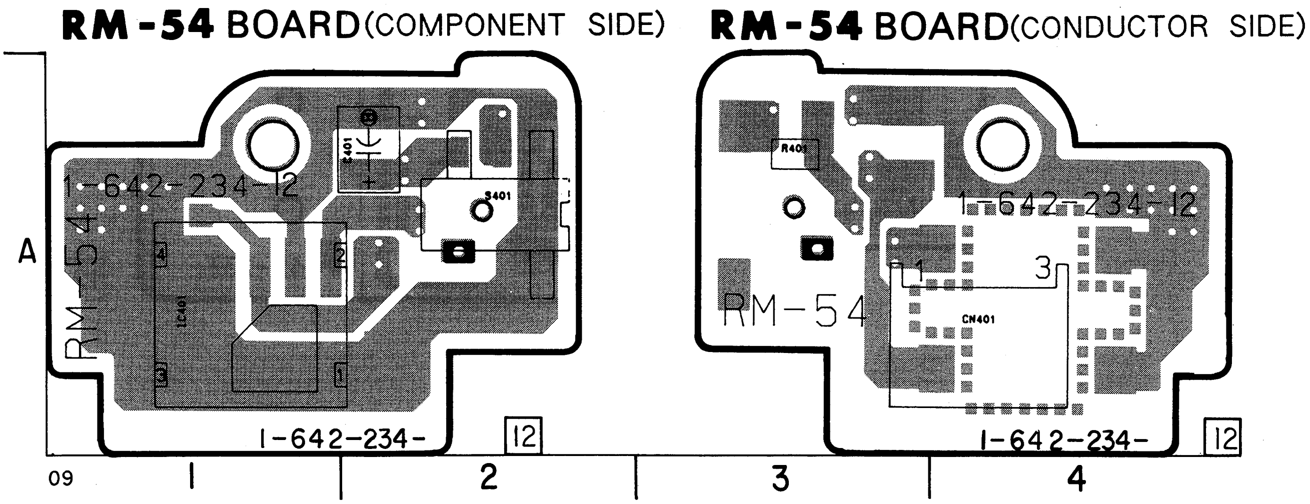
RM-54 (REMOTE CONTROL RECEIVER) PRINTED WIRING BOARD

— Ref. No. RM-54 BOARD: 4000 series —

- FK-51 board is replaced as blocks, so that there PRINTED WIRING BOARDS are omitted.

- **For printed wiring boards.**
- RM-54 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.


RM-54 BOARD(COMPONENT SIDE) **RM-54** BOARD(CONDUCTOR SIDE)
A
1-642-234-12
RM-54
C401
S401
IC401
4
2
3
1
1-642-234-
12
R401
1-642-234-12
1
3
RM-54
CN401
1-642-234-
12
09
1
2
3
4

< IC >

IC401 8-749-923-29 IC RS-20E-T

LJ-6 (REMOTE CONTROL JACK) PRINTED WIRING BOARD

— Ref. No. LJ-6 BOARD: 5000 series —

- CF-29 board is replaced as blocks, so that there PRINTED WIRING BOARDS are omitted.

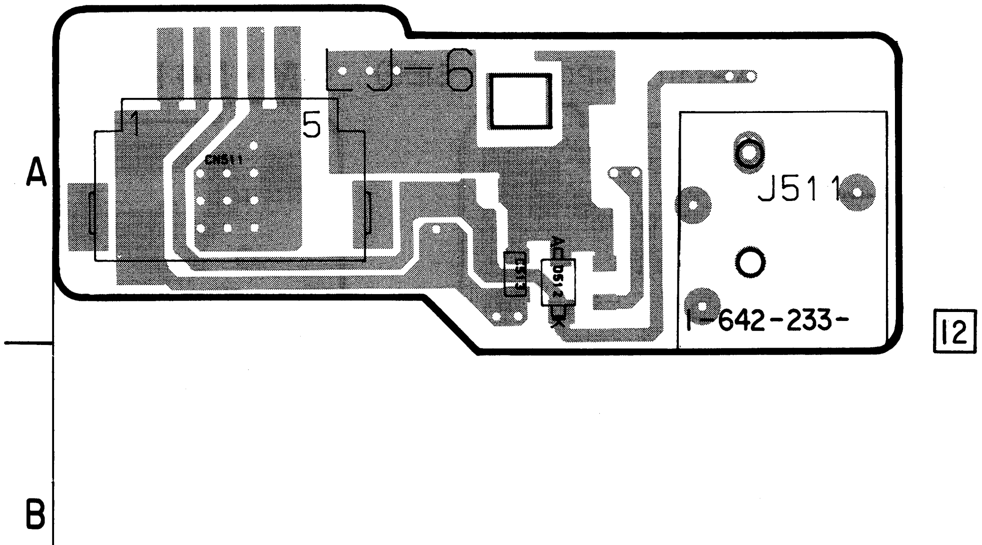
- **For printed wiring boards.**
- LJ-6 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

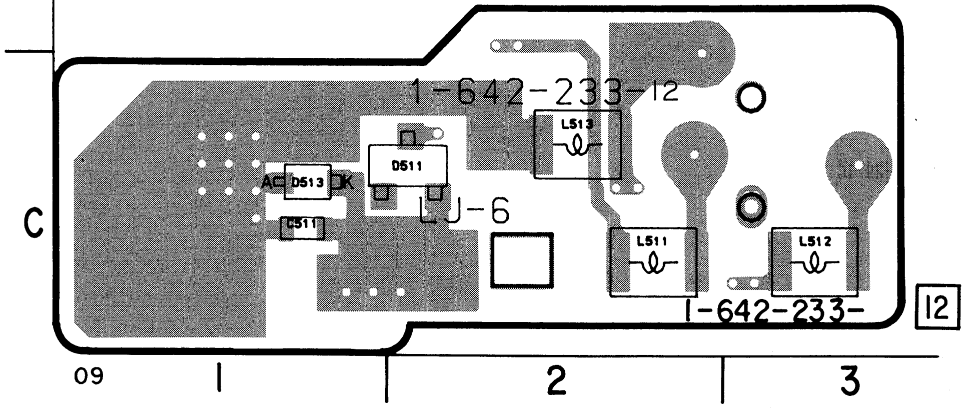
< DIODE >

D511	8-719-106-71	DIODE RD12M-B2
D512	8-719-420-14	DIODE MA8082-M
D513	8-719-404-46	DIODE MA110

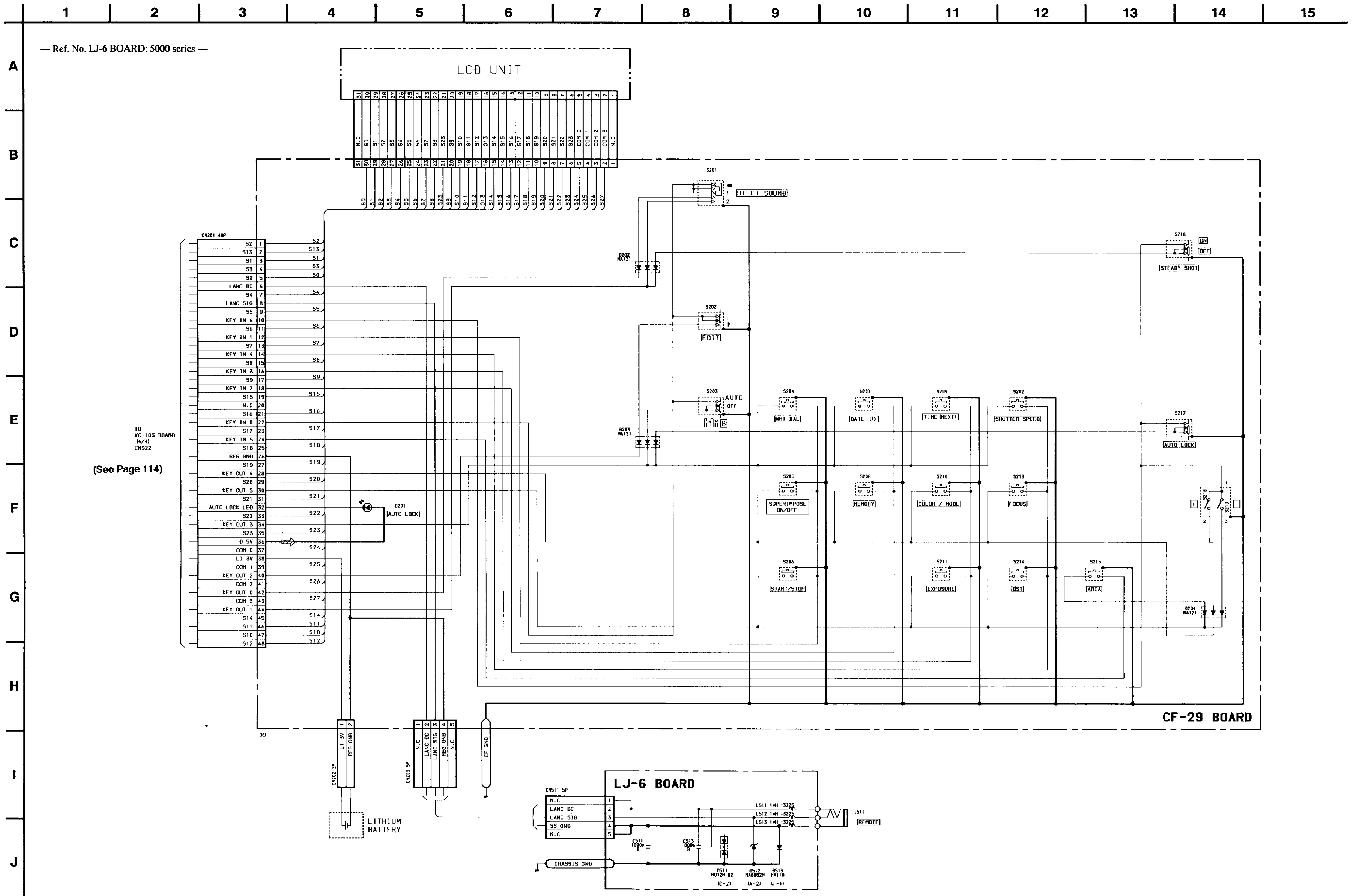
LJ-6 BOARD (COMPONENT SIDE)


LJ-6
1
5
CN511
J511
1
A
K
D512
D513
1-642-233-
12
A
B

LJ-6 BOARD (CONDUCTOR SIDE)


1-642-233-12
L513
D511
A
D513
K
C511
LJ-6
L511
L512
1-642-233-
12
C
09
1
2
3

CF-29 (CAMERA FUNCTION SWITCH), LJ-6 (REMOTE CONTROL JACK) SCHEMATIC DIAGRAMS



— Ref. No. LJ-6 BOARD: 5000 series —

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4
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8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
LCD UNIT
N.C
S0
S1
S2
S3
S4
S5
S6
S7
S8
S23
S9
S10
S11
S12
S13
S14
S15
S16
S17
S18
S19
S20
S21
S22
S23
COM 0
COM 1
COM 2
COM 3
N.C
CN201 48P
S2 1
S13 2
S1 3
S3 4
S0 5
LANC DC 6
S4 7
LANC SIG 8
S5 9
KEY IN 6 10
S6 11
KEY IN 1 12
S7 13
KEY IN 4 14
S8 15
KEY IN 3 16
S9 17
KEY IN 2 18
S15 19
N.C 20
S16 21
KEY IN 0 22
S17 23
KEY IN 5 24
S18 25
REG GND 26
S19 27
KEY OUT 4 28
S20 29
KEY OUT 5 30
S21 31
AUTO LOCK LED 32
S22 33
KEY OUT 3 34
S23 35
D 5V 36
COM 0 37
LI 3V 38
COM 1 39
KEY OUT 2 40
COM 2 41
KEY OUT 0 42
COM 3 43
KEY OUT 1 44
S14 45
S11 46
S10 47
S12 48
TO VC-103 BOARD (4/4) CN922
(See Page 114)
D201
AUTO LOCK
S201
HI-FI SOUND
D202 MA121
S202
EDIT
S203
AUTO
OFF
Hi8
D203 MA121
S204
WHT BAL
S205
SUPERIMPOSE ON/OFF
S206
START/STOP
S207
DATE (+)
S208
MEMORY
S209
TIME (NEXT)
S210
COLOR / MODE
S211
EXPOSURE
S212
SHUTTER SPEED
S213
FOCUS
S214
DST
S215
AREA
S216
ON
OFF
STEADY SHOT
S217
AUTO LOCK
S218
S219
+
−
D204 MA121
CF-29 BOARD
09
CN202 2P
LI 3V
REG GND
LITHIUM BATTERY
CN203 5P
N.C
LANC DC
LANC SIG
REG GND
N.C
CF GND
CN511 5P
N.C
LANC DC
LANC SIG
SS GND
N.C
CHASSIS GND
LJ-6 BOARD
L511 1μH :3225
L512 1μH :3225
L513 1μH :3225
C511 1000p B
C513 1000p B
D511 RD12M-B2 (C-2)
D512 MA8082M (A-2)
D513 MA110 (C-1)
J511
REMOTE

AU-118 (AUDIO), HJ-13 (HEADPHONE JACK) PRINTED WIRING BOARDS

— Ref. No. AU-118, HJ-13 BOARDS: 6000 series —

- **For printed wiring boards.**
- AU-118, HJ-13 boards are the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

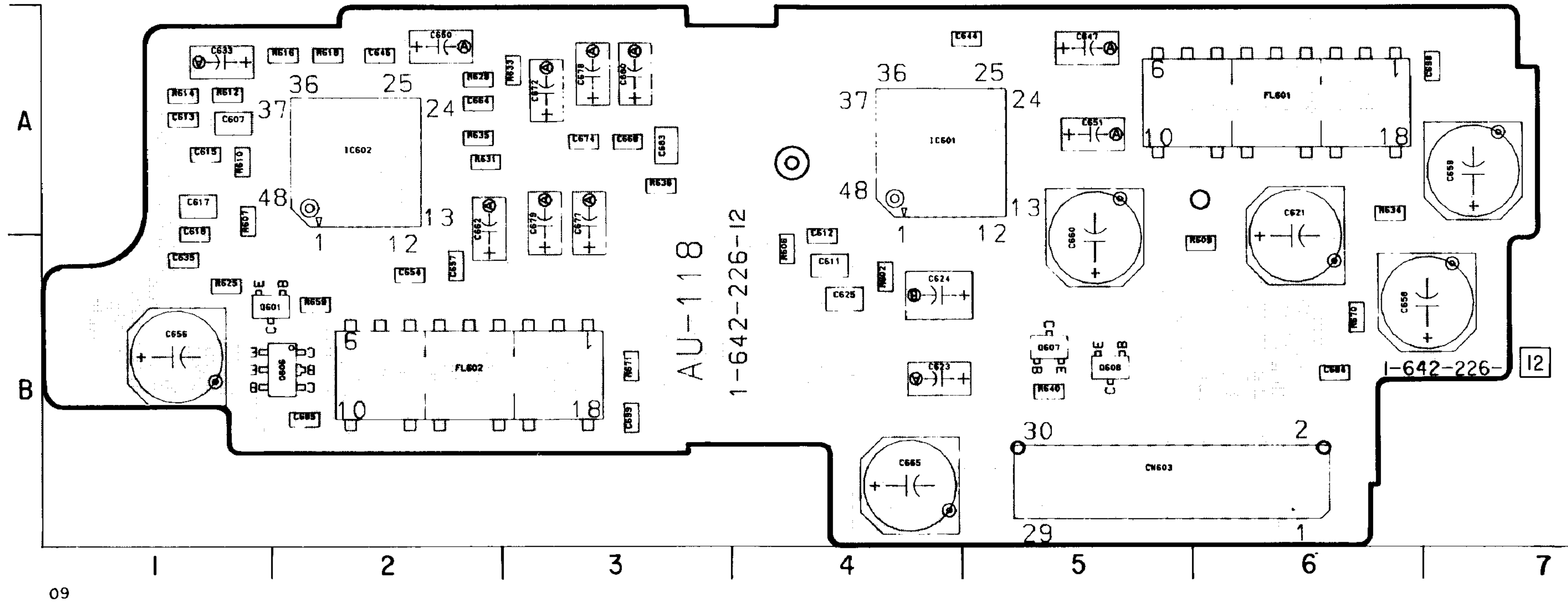
< IC >

IC601	8-759-823-19	IC	CXA1488R
IC602	8-759-823-19	IC	CXA1488R
IC603	8-759-823-21	IC	CXA1536QQ
IC604	8-759-008-67	IC	MC14066BF

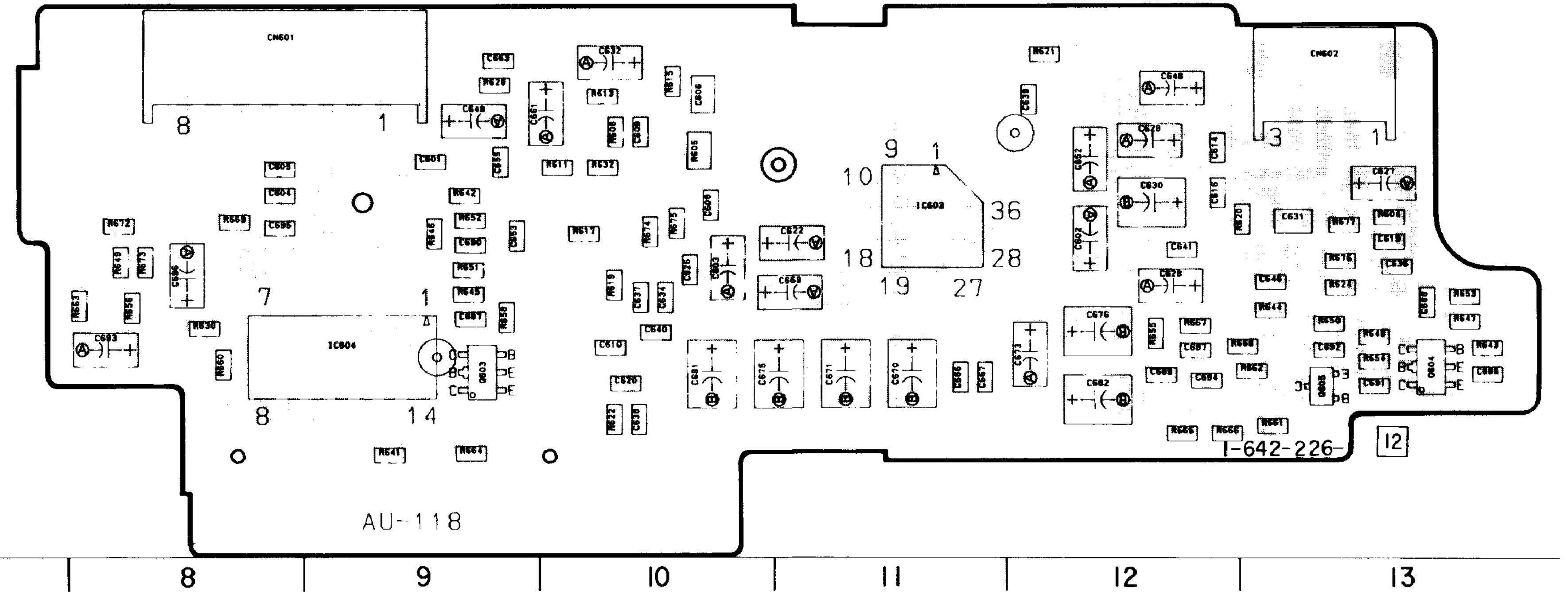
< TRANSISTOR >

Q601	8-729-905-23	TRANSISTOR	2SA1576-R
Q603	8-729-402-81	TRANSISTOR	XN4501
Q604	8-729-402-81	TRANSISTOR	XN4501
Q605	8-729-905-18	TRANSISTOR	DTC144EU
Q606	8-729-402-81	TRANSISTOR	XN4501
Q607	8-729-905-12	TRANSISTOR	DTA144EU
Q608	8-729-905-18	TRANSISTOR	DTC144EU

AU-118 BOARD (COMPONENT SIDE)


A
B
AU-118
1-642-226-12
1-642-226-
12
IC601
IC602
FL601
FL602
CN603
36
25
37
24
48
1
12
13
30
2
29
1
6
10
18
1
2
3
4
5
6
7
09

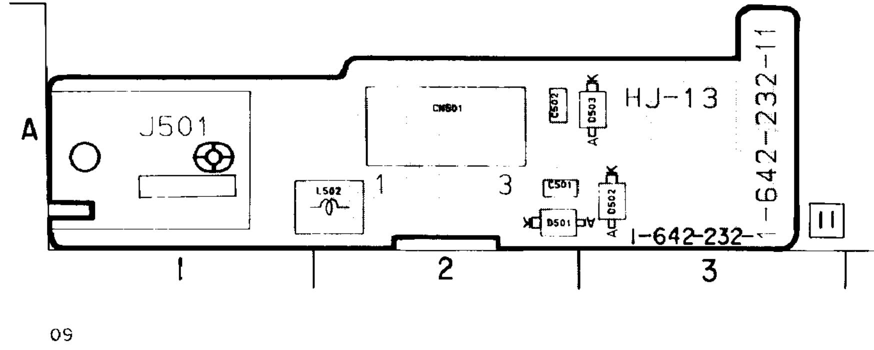
AU-118 BOARD (CONDUCTOR SIDE)


CN601
CN602
IC603
IC604
AU-118
1-642-226-
12
8
1
9
1
10
36
18
28
19
27
7
1
8
14
3
1
8
9
10
11
12
13

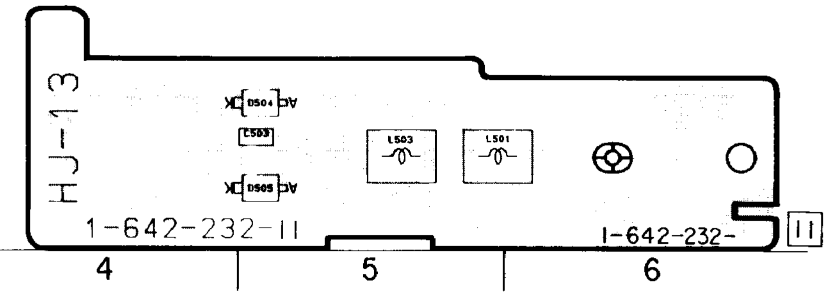
< DIODE >

D501	8-719-420-14	DIODE	MA8082-M
D502	8-719-420-14	DIODE	MA8082-M
D503	8-719-420-14	DIODE	MA8082-M
D504	8-719-420-14	DIODE	MA8082-M
D505	8-719-404-46	DIODE	MA110

HJ-13 BOARD (COMPONENT SIDE)


A
J501
HJ-13
1-642-232-11
1-642-232-
11
CN501
1
3
1
2
3
09

HJ-13 BOARD (CONDUCTOR SIDE)

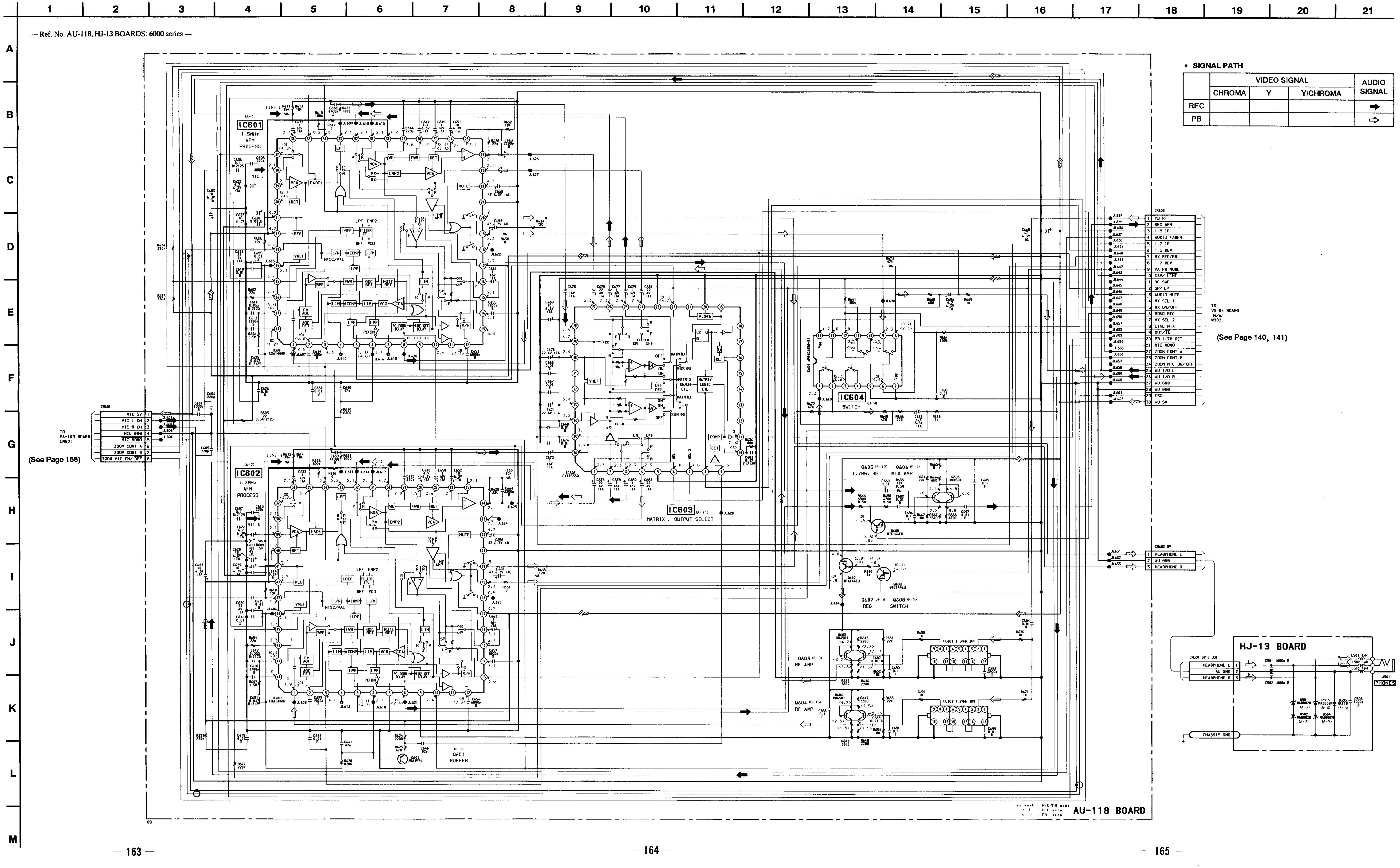

HJ-13
1-642-232-11
1-642-232-
11
L503
L501
4
5
6

AU-118 (AUDIO), HJ-13 (HEADPHONE JACK) SCHEMATIC DIAGRAMS

— Ref. No. AU-118, HJ-13 BOARDS: 6000 series —

- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB				⇨



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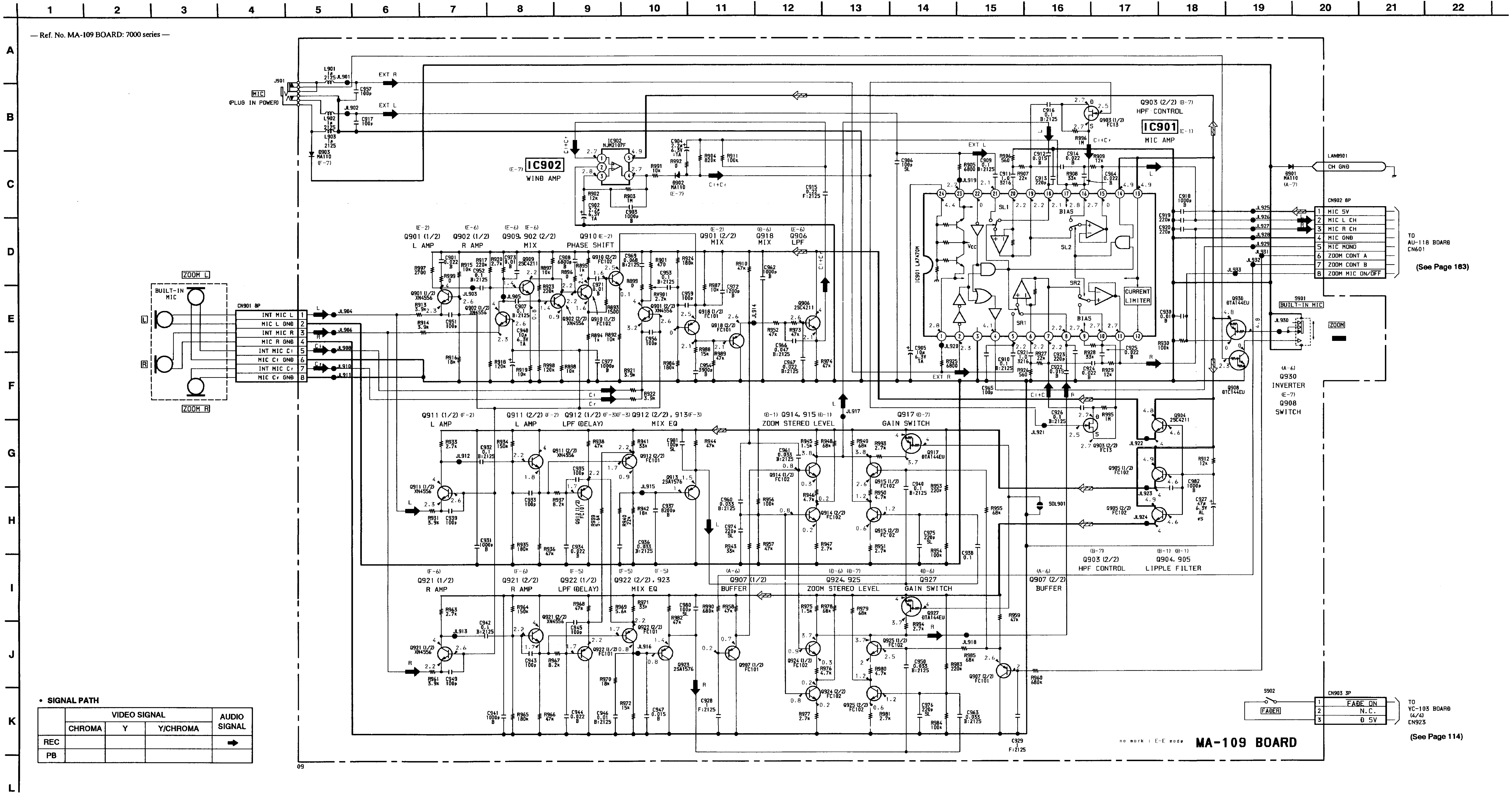
C
D
E
F
G
H
I
J
K
L
M
IC601
1.5MHz AFM PROCESS
IC602
1.7MHz AFM PROCESS
IC603
MATRIX, OUTPUT SELECT
IC604
SWITCH
Q605 Q606
1.7MHz DET MIX AMP
Q607 Q608
REG SWITCH
Q603
RF AMP
Q604
RF AMP
Q601
BUFFER
FL601 1.5MHz BPF
FL602 1.7MHz BPF
CN601
MIC 5V 1
MIC L CH 2
MIC R CH 3
MIC GND 4
MIC MONO 5
ZOOM CONT A 6
ZOOM CONT B 7
ZOOM MIC ON/OFF 8
TO MA-109 BOARD CN901
(See Page 168)
CN603
1 PB RF
2 REC AFM
3 1.5 IR
4 AUDIO FADER
5 1.7 IR
6 1.5 DEV
7 MX REC/PB
8 1.7 DEV
9 VA PB MODE
10 CAM/ LINE
11 RF SWP
12 SP/ LP
13 AUDIO MUTE
14 MX SEL 1
15 MX ON/OFF
16 MONO REC
17 MX SEL 2
18 LINE MIX
19 OUT/IN
20 PB 1.7M DET
21 MIC MONO
22 ZOOM CONT A
23 ZOOM CONT B
24 ZOOM MIC ON/OFF
25 AU I/O L
26 AU I/O R
27 AU GND
28 AU GND
29 FSC
30 AU 5V
TO VS-84 BOARD (4/6) W303
(See Page 140, 141)
CN602 3P
1 HEADPHONE L
2 AU GND
3 HEADPHONE R
HJ-13 BOARD
CN501 3P I JST
HEADPHONE L 1
AU GND 2
HEADPHONE R 3
C501 1000p B
C502 1000p B
L501 1μH
L502 1μH
L503 1μH
D501 MA8082M (A-2)
D502 MA8082M (A-3)
D503 MA8082M (A-3)
D504 MA8082M (A-5)
D505 MA110 (A-5)
C503 1000p B
J501
PHONES
CHASSIS GND
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
AU-118 BOARD

MA-109 (MIC AMPLIFIER) SCHEMATIC DIAGRAM

— Ref. No. MA-109 BOARD: 7000 series —



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
A B C D E F G H I J K L
MIC (PLUG IN POWER)
J901
EXT R
EXT L
IC902 WIND AMP
IC901 MIC AMP
IC501 LA7470M
Q903 (2/2) HPF CONTROL
Q901 (1/2) L AMP
Q902 (1/2) R AMP
Q909, 902 (2/2) MIX
Q910 PHASE SHIFT
Q901 (2/2) MIX
Q918 MIX
Q906 LPF
ZOOM L
ZOOM R
BUILT-IN MIC
CN901 8P
INT MIC L
MIC L GND
INT MIC R
MIC R GND
INT MIC Cl
MIC Cl GND
INT MIC Cr
MIC Cr GND
Q911 (1/2) L AMP
Q911 (2/2) L AMP
Q912 (1/2) LPF (DELAY)
Q912 (2/2), 913 MIX EQ
Q914, 915 ZOOM STEREO LEVEL
Q917 GAIN SWITCH
Q921 (1/2) R AMP
Q921 (2/2) R AMP
Q922 (1/2) LPF (DELAY)
Q922 (2/2), 923 MIX EQ
Q907 (1/2) BUFFER
Q924, 925 ZOOM STEREO LEVEL
Q927 GAIN SWITCH
Q907 (2/2) BUFFER
Q903 (2/2) HPF CONTROL
Q904, 905 LIPPLE FILTER
Q930 INVERTER
Q908 SWITCH
S901 BUILT-IN MIC
ZOOM
SOL901
CURRENT LIMITER
BIAS
SL1
SL2
SR1
SR2
LAN0901
CH GND
CN902 8P
MIC 5V
MIC L CH
MIC R CH
MIC GND
MIC MONO
ZOOM CONT A
ZOOM CONT B
ZOOM MIC ON/OFF
TO AU-118 BOARD CN601
(See Page 163)
S902
FADER
CN903 3P
FADE ON
N.C.
0 5V
TO VC-103 BOARD (4/4) CN923
(See Page 114)
no mark : E-E mode
MA-109 BOARD

- SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB				

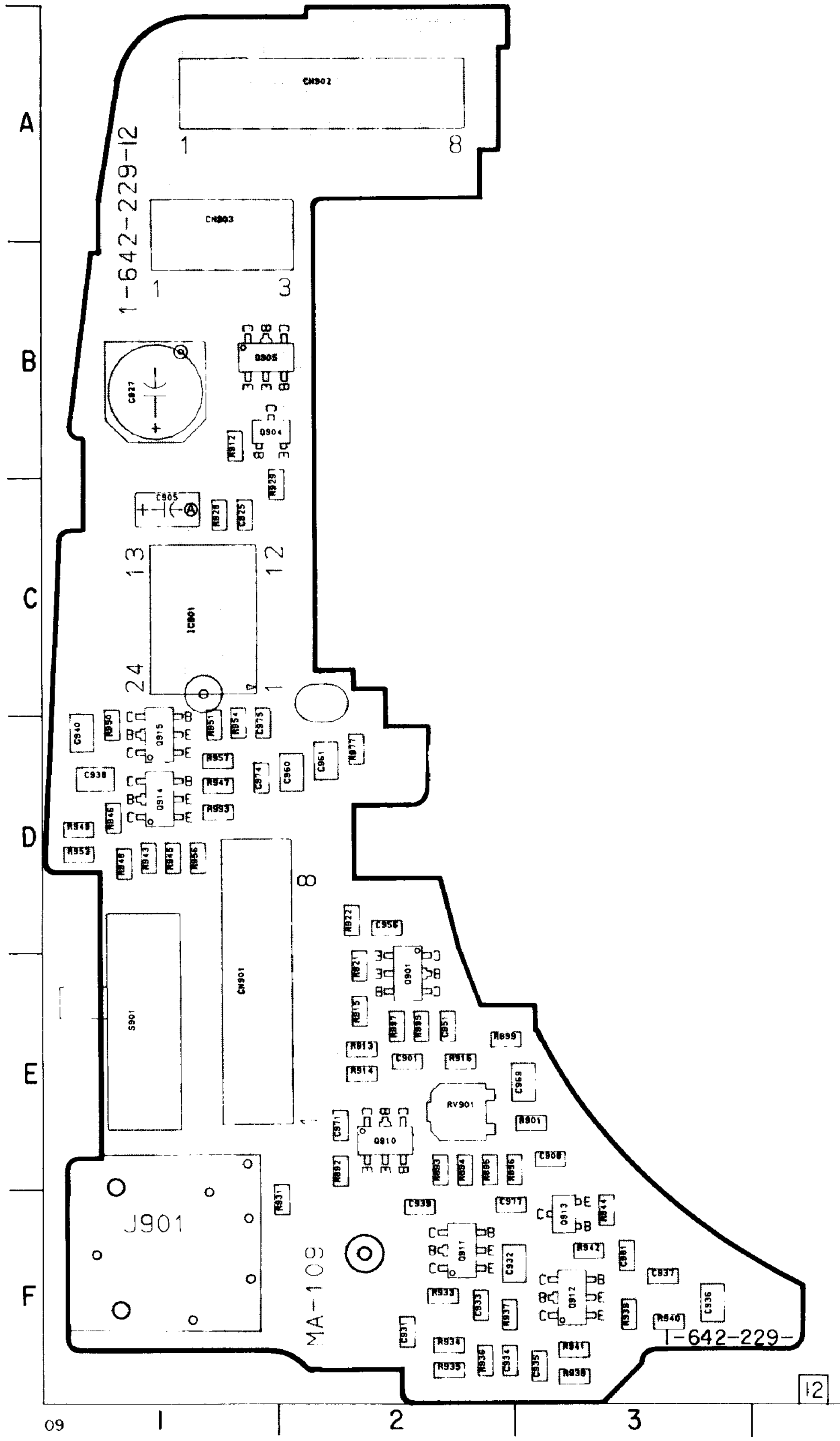
AUDIO

AUDIO **AUDIO**

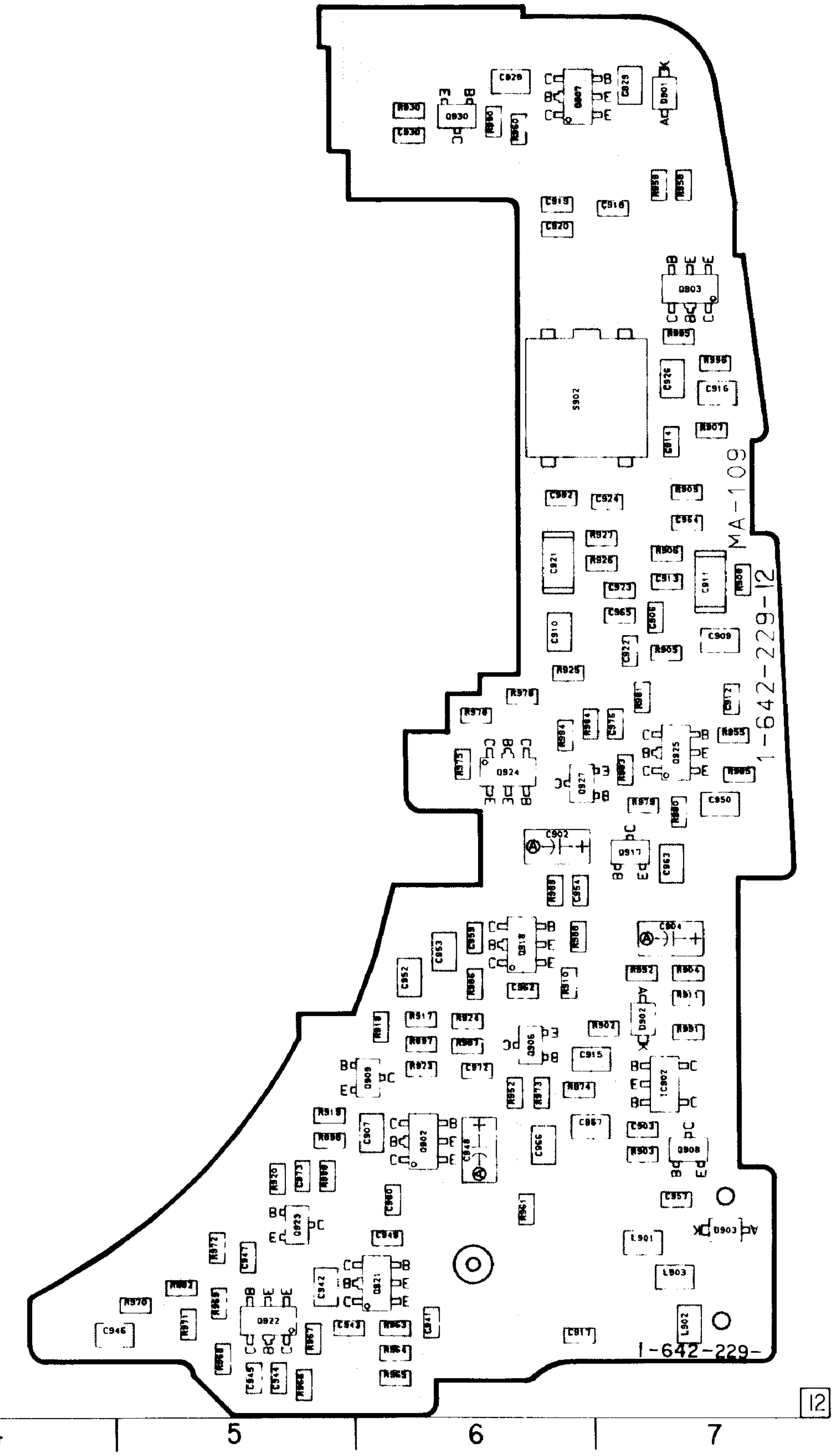
MA-109 (MIC AMPLIFIER) PRINTED WIRING BOARD

— Ref. No. MA-109 BOARD: 7000 series —

MA-109 BOARD (COMPONENT SIDE)



MA-109 BOARD (CONDUCTOR SIDE)



- **For printed wiring boards.**
- MA-109 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

< DIODE >

D901	8-719-404-46	DIODE MA110	
D902	8-719-404-46	DIODE MA110	
D903	8-719-404-46	DIODE MA110	

< IC >

IC901	8-759-057-79	IC LA7470V	
IC902	8-759-710-79	IC NJM2107F	

< TRANSISTOR >

Q901	8-729-015-63	TRANSISTOR	XN4556-(TX)
Q902	8-729-015-63	TRANSISTOR	XN4556-(TX)
Q903	8-729-010-80	TRANSISTOR	FC13
Q904	8-729-822-97	TRANSISTOR	2SC4211-5. 6. 7
Q905	8-729-822-94	TRANSISTOR	FC102
Q906	8-729-822-97	TRANSISTOR	2SC4211-5. 6. 7
Q907	8-729-822-48	TRANSISTOR	FC101
Q908	8-729-905-18	TRANSISTOR	DTC144EU
Q909	8-729-822-97	TRANSISTOR	2SC4211-5. 6. 7
Q910	8-729-822-94	TRANSISTOR	FC102
Q911	8-729-015-63	TRANSISTOR	XN4556-(TX)
Q912	8-729-822-48	TRANSISTOR	FC101
Q913	8-729-905-23	TRANSISTOR	2SA1576-R
Q914	8-729-822-94	TRANSISTOR	FC102
Q915	8-729-822-94	TRANSISTOR	FC102
Q917	8-729-905-12	TRANSISTOR	DTA144EU
Q918	8-729-822-48	TRANSISTOR	FC101
Q921	8-729-015-63	TRANSISTOR	XN4556-(TX)
Q922	8-729-822-48	TRANSISTOR	FC101
Q923	8-729-905-23	TRANSISTOR	2SA1576-R
Q924	8-729-822-94	TRANSISTOR	FC102
Q925	8-729-822-94	TRANSISTOR	FC102
Q927	8-729-905-12	TRANSISTOR	DTA144EU
Q930	8-729-905-12	TRANSISTOR	DTA144EU

VF-42 (VIEW FINDER) PRINTED WIRING BOARD

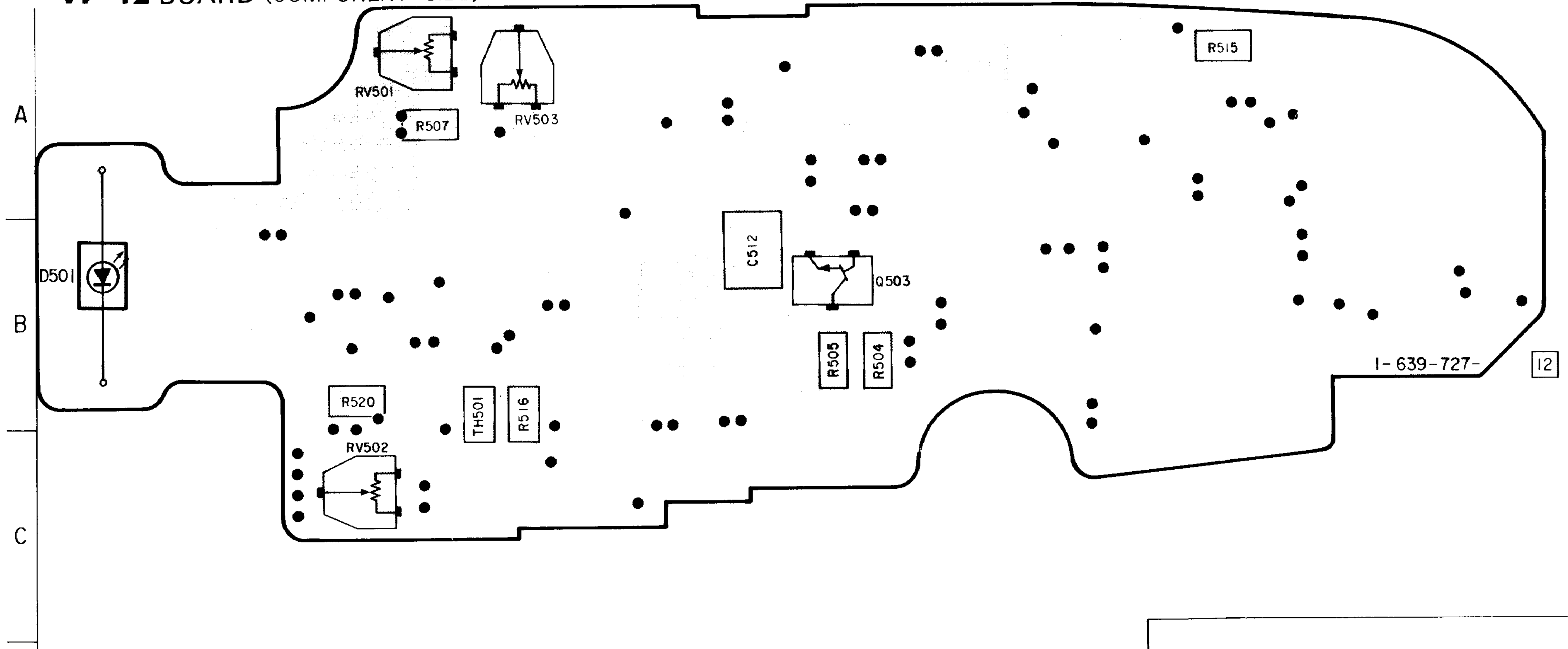
— Ref. No. VF-42 BOARD: 8000 series —

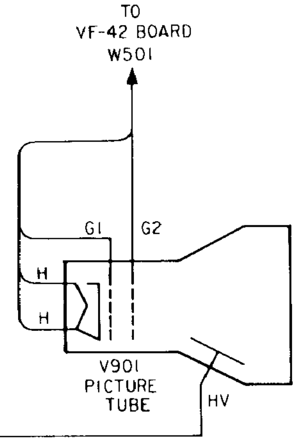
- **For printed wiring boards.**

Caution:

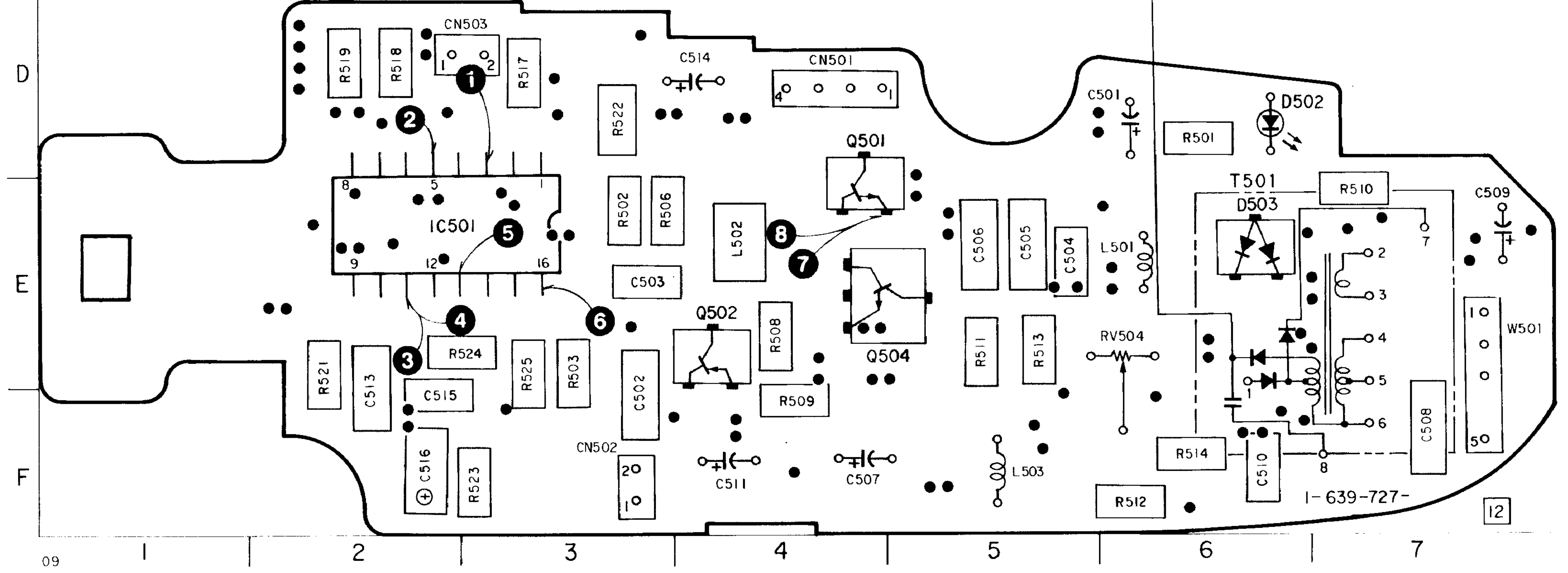
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

VF-42 BOARD (COMPONENT SIDE)


A
B
C
RV501
RV503
R507
R515
D501
C512
Q503
R505
R504
1-639-727-
12
R520
RV502
TH501
R516


TO
VF-42 BOARD
W501
G1
G2
H
H
V901
PICTURE
TUBE
HV

VF-42 BOARD (CONDUCTOR SIDE)


D
E
F
R519
R518
CN503
1
2
R517
C514
CN501
4
1
C501
D502
R501
T501
R510
D503
C509
7
2
3
4
5
6
8
1
R522
Q501
R502
R506
L502
IC501
8
5
1
9
12
16
C503
Q502
Q504
R508
R509
C506
C505
C504
L501
R511
R513
RV504
W501
1
5
C508
C510
R514
R512
L503
C507
C511
CN502
2
1
C502
R503
R525
R524
C515
C513
R521
C516
R523
1-639-727-
12
09
1
2
3
4
5
6
7

< DIODE >

D501	8-719-820-65	DIODE	TLS221
D502	8-719-984-02	LED	BR4371F
D503	8-719-400-20	DIODE	MA152WA

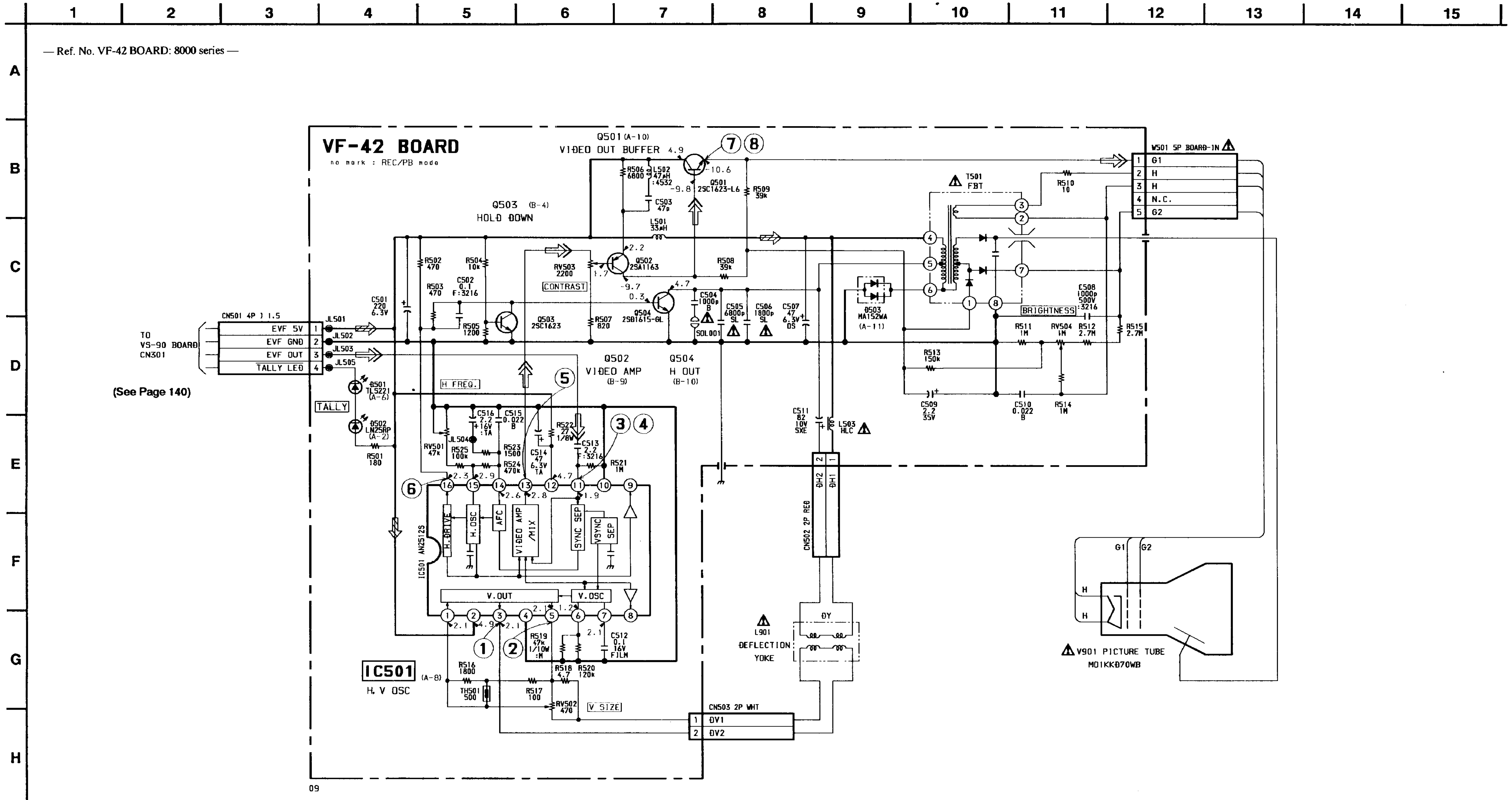
< IC >

IC501	8-759-420-01	IC	AN2512S

< TRANSISTOR >

Q501	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q502	8-729-216-31	TRANSISTOR	2SA1163-G
Q503	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q504	8-729-106-68	TRANSISTOR	2SD1615A-GP

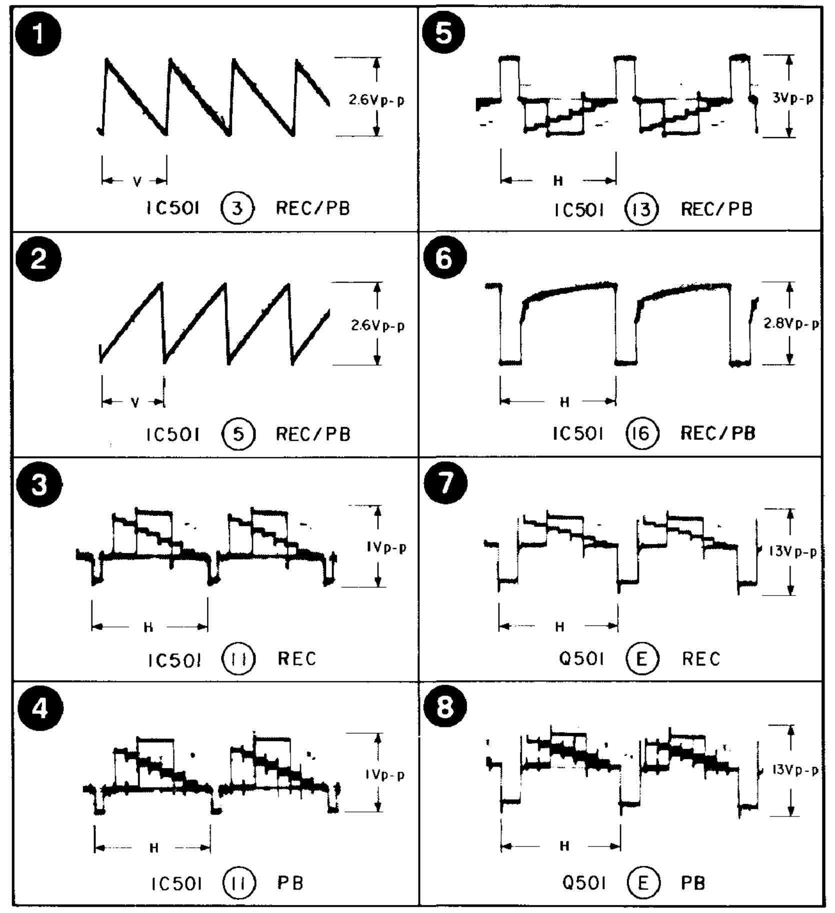
VF-42 (VIEW FINDER) SCHEMATIC DIAGRAM


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
A B C D E F G H I J
— Ref. No. VF-42 BOARD: 8000 series —
VF-42 BOARD
no mark : REC/PB mode
TO
VS-90 BOARD
CN301
(See Page 140)
CN501 4P) 1.5
EVF 5V 1
EVF GND 2
EVF OUT 3
TALLY LED 4
JL501
JL502
JL503
JL505
D501 TLS221 (A-6)
D502 LN25RP (A-2)
TALLY
R501 180
C501 220 6.3V
R502 470
R503 470
R504 10k
C502 0.1 F:3216
R505 1200
Q503 (B-4) HOLD DOWN
Q503 2SC1623
RV503 2200
CONTRAST
R507 820
Q501 (A-10) VIDEO OUT BUFFER 4.9
⑦⑧
R506 6800
L502 47µH :4532
C503 47p
-10.6
-9.8
Q501 2SC1623-L6
R509 39k
L501 33µH
2.2
1.7
Q502 2SA1163
-9.7
0.3
4.7
Q504 2SD1615-GL
R508 39k
C504 1000p B
SOL001
C505 6800p SL
C506 1800p SL
C507 47 6.3V OS
Q502 VIDEO AMP (B-9)
Q504 H OUT (B-10)
H FREQ.
⑤
③④
⑥
RV501 47k
JL504
C516 2.2 16V :TA
C515 0.022 B
R525 100k
R523 1500
R524 470k
C514 47 6.3V TA
R522 27 1/8W
C513 2.2 F:3216
R521 1M
2.3 2.9 2.6 2.8 4.7 1.9
16 15 14 13 12 11 10 9
H.DRIVE
H.OSC
AFC
VIDEO AMP /MIX
SYNC SEP
VSYNC SEP
IC501 AN2512S
V.OUT
V.OSC
1 2 3 4 5 6 7 8
2.1 4.9 2.1 2.1 1.2 2.1
①②
R519 47k 1/10W :M
C512 0.1 16V FILM
IC501 (A-8)
H, V OSC
R516 1800
TH501 500
R517 100
R518 4.7
R520 120k
RV502 470
V SIZE
CN503 2P WHT
1 DV1
2 DV2
09
T501 FBT
D503 MA152WA (A-11)
BRIGHTNESS
C508 1000p 500V :3216
R511 1M
RV504 1M
R512 2.7M
R515 2.7M
R513 150k
C509 2.2 35V
C510 0.022 B
R514 1M
R510 10
W501 5P BOARD-IN
1 G1
2 H
3 H
4 N.C.
5 G2
C511 82 10V SXE
L503 HLC
2 1
DH2 DH1
CN502 2P RED
DY
L901
DEFLECTION
YOKE
G1 G2
H
H
V901 PICTURE TUBE
M01KK070WB

- **SIGNAL PATH**

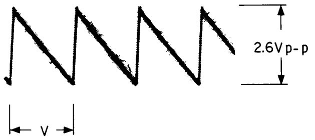
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB		⇨		

VF-42 BOARD



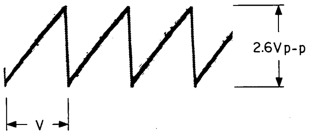
VF-42 BOARD

❶



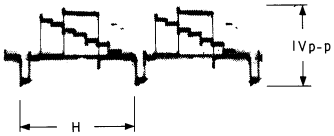
IC501 ③ REC/PB

❷



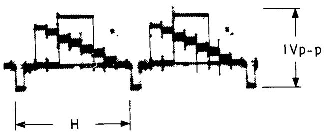
IC501 ⑤ REC/PB

❸



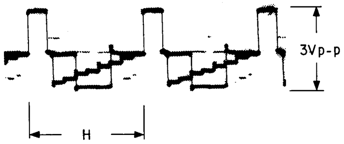
IC501 ⑪ REC

❹



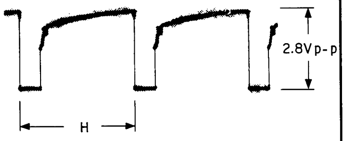
IC501 ⑪ PB

❺



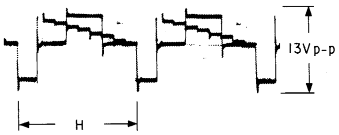
IC501 ⑬ REC/PB

❻



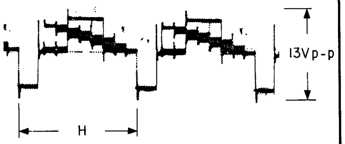
IC501 ⑯ REC/PB

❼



Q501 Ⓔ REC

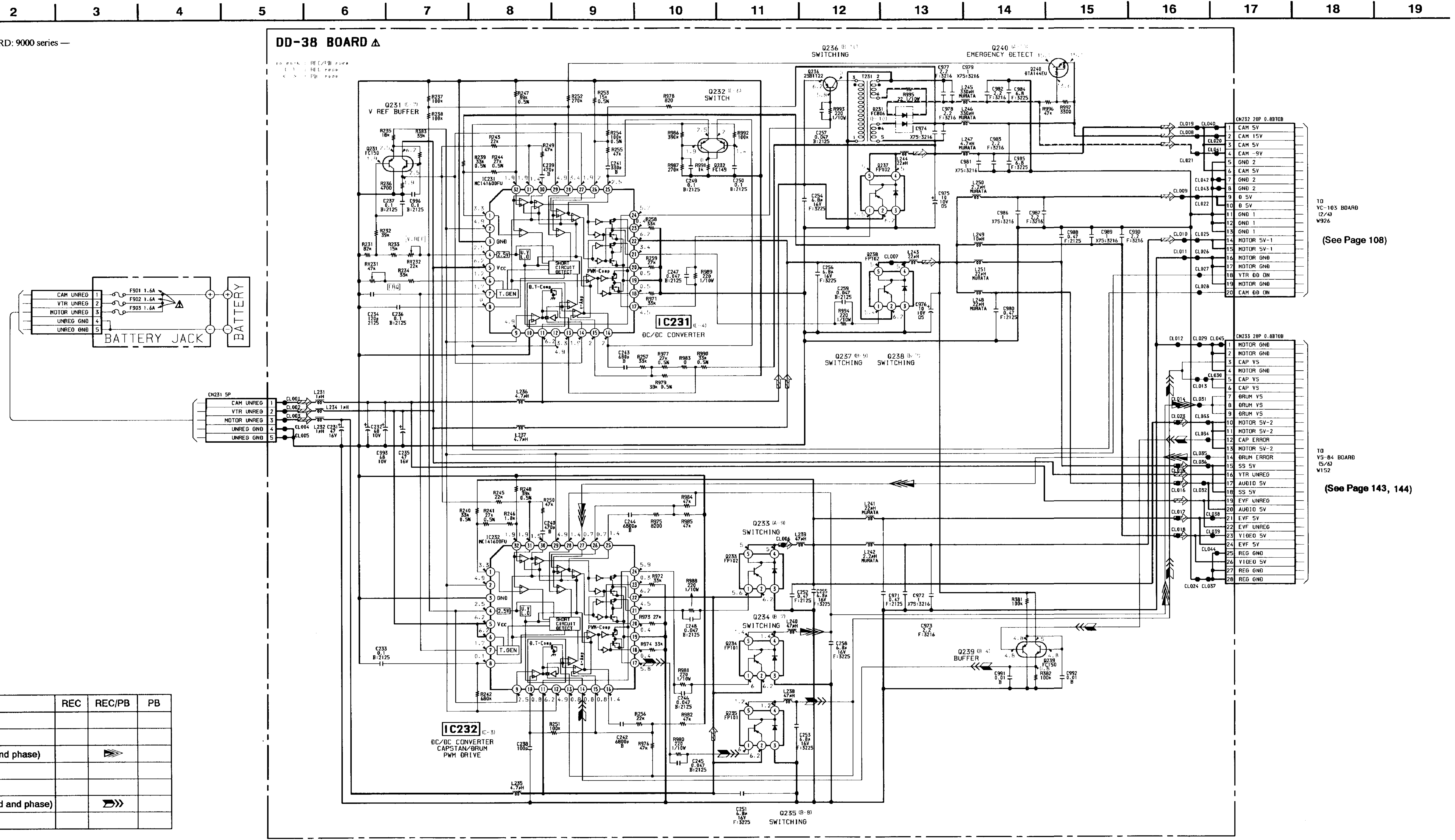
❽



Q501 Ⓔ PB

DD-38 (DC-DC CONVERTER) SCHEMATIC DIAGRAM

— Ref. No. DD-38 BOARD: 9000 series —

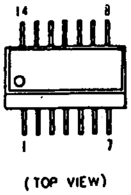

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
A B C D E F G H I J
DD-38 BOARD ⚠
Q231 V REF BUFFER
IC231 DC/DC CONVERTER
Q232 SWITCH
Q236 SWITCHING
Q240 EMERGENCY DETECT
Q237 SWITCHING
Q238 SWITCHING
Q233 SWITCHING
Q234 SWITCHING
Q235 SWITCHING
Q239 BUFFER
IC232 DC/DC CONVERTER CAPSTAN/DRUM PWM DRIVE
GND
Vcc
T.GEN
SHORT CIRCUIT DETECT
PWM-Comp
D.T-Comp
BATTERY JACK
BATTERY
CAM UNREG
VTR UNREG
MOTOR UNREG
UNREG GND
UNREG GND
F901 1.6A
F902 1.6A
F903 1.6A
CN231 5P
CN232 20P 0.8BTOB
1 CAM 5V
2 CAM 15V
3 CAM 5V
4 CAM -9V
5 GND 2
6 CAM 5V
7 GND 2
8 GND 2
9 D 5V
10 D 5V
11 GND 1
12 GND 1
13 GND 1
14 MOTOR 5V-1
15 MOTOR 5V-1
16 MOTOR GND
17 MOTOR GND
18 VTR DD ON
19 MOTOR GND
20 CAM DD ON
TO VC-103 BOARD (2/4) W926
(See Page 108)
CN233 28P 0.8BTOB
1 MOTOR GND
2 MOTOR GND
3 CAP VS
4 MOTOR GND
5 CAP VS
6 CAP VS
7 DRUM VS
8 DRUM VS
9 DRUM VS
10 MOTOR 5V-2
11 MOTOR 5V-2
12 CAP ERROR
13 MOTOR 5V-2
14 DRUM ERROR
15 SS 5V
16 VTR UNREG
17 AUDIO 5V
18 SS 5V
19 EVF UNREG
20 AUDIO 5V
21 EVF 5V
22 EVF UNREG
23 VIDEO 5V
24 EVF 5V
25 REG GND
26 VIDEO 5V
27 REG GND
28 REG GND
TO VS-84 BOARD (5/6) W152
(See Page 143, 144)
09

- **SIGNAL PATH**

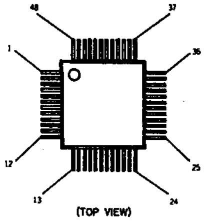
	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)		⇛	
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)		⇛》	
Ref. signal			

4-3. SEMICONDUCTORS

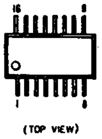
AN2512S


14
8
1
7
(TOP VIEW)

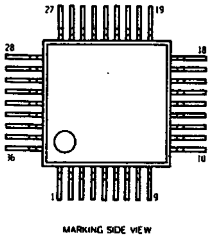
CXA1208R
CXA1481R
MCD002AR


48
37
1
36
12
25
13
24
(TOP VIEW)

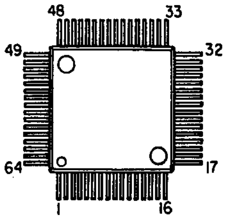
CXA1448N
CXA1452
CXL5502M
MPC1727VMER


16
9
1
8
(TOP VIEW)

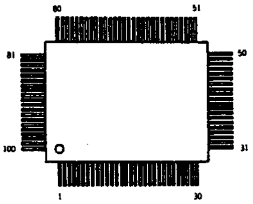
CXA1536Q
LB8110M


27
19
28
18
36
10
1
9
MARKING SIDE VIEW

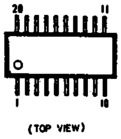
CXD1256R


48
33
49
32
64
17
1
16

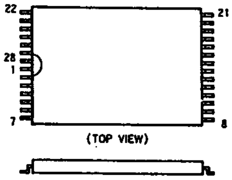
CXD2100Q
CXP80624-268Q/277Q
CXP80624-266Q


80
51
81
50
100
31
1
30

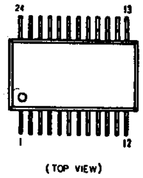
CXD2104N
LC78865M
MPC1724MR


20
11
1
10
(TOP VIEW)

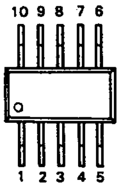
CXK5864BTM-12LL


22
21
28
1
7
8
(TOP VIEW)

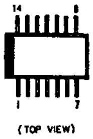
LA7470V


24
13
1
12
(TOP VIEW)

LB1830M


10 9 8 7 6
1 2 3 4 5

LM324DR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(TOP VIEW)

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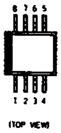
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1 2 3 4
(TOP VIEW)

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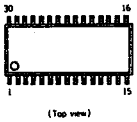
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(Top view)

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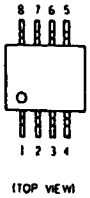
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(TOP VIEW)

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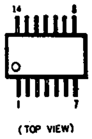
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(TOP VIEW)

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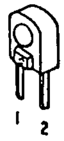

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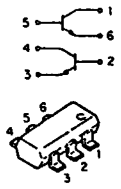
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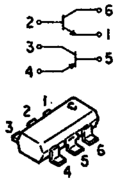
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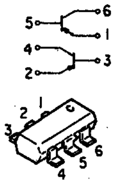
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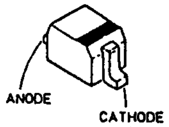
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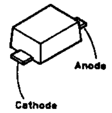
CATHODE

MA728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Cathode

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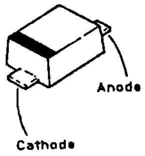
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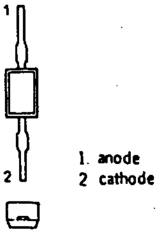
Cathode

TLS221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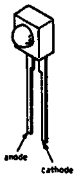
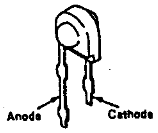
1. anode
2 cathode

BR4371F


anode
cathode

GL453


Anode
Cathode

SECTION 5
EXPLODED VIEWS

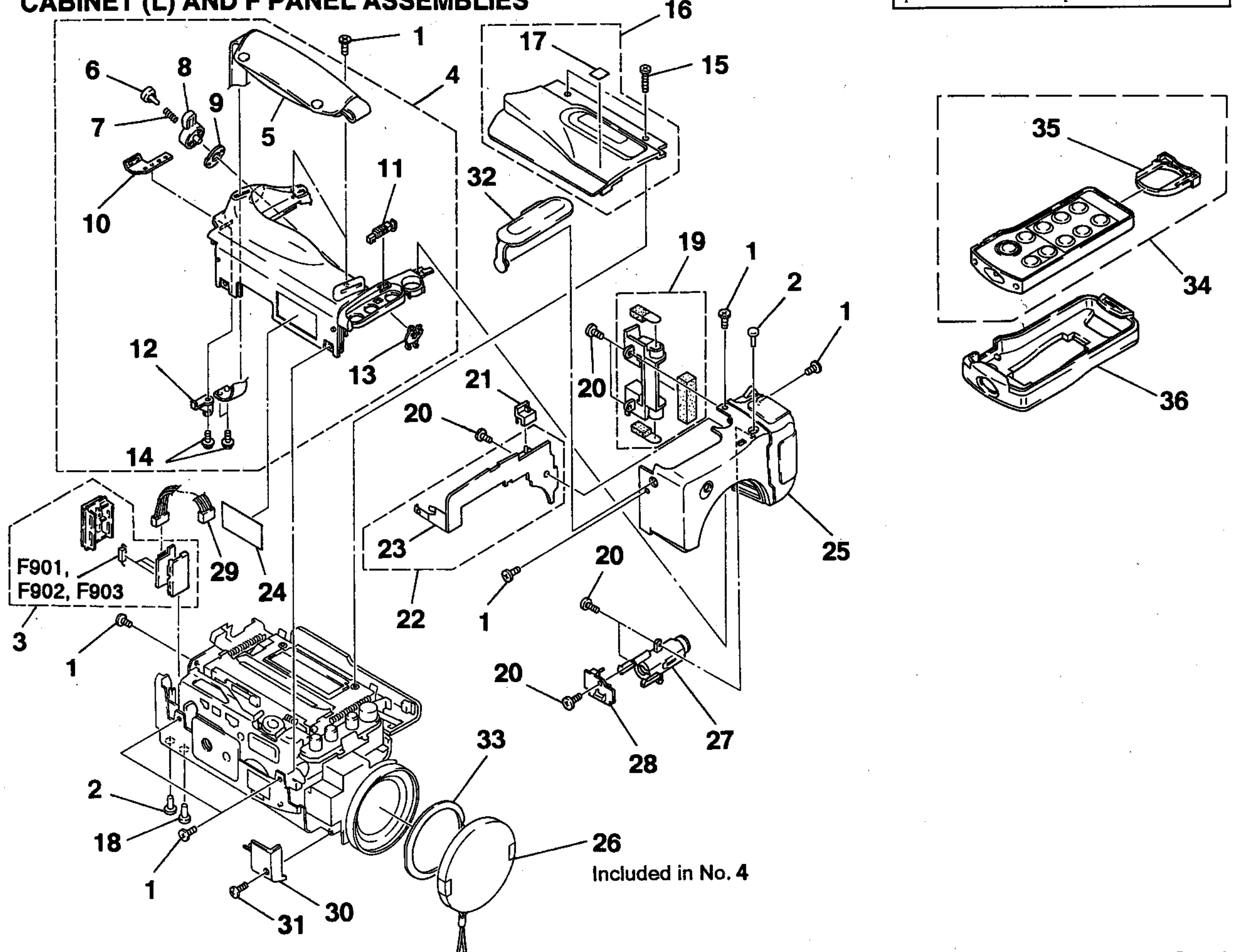
NOTE:

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " ∗ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

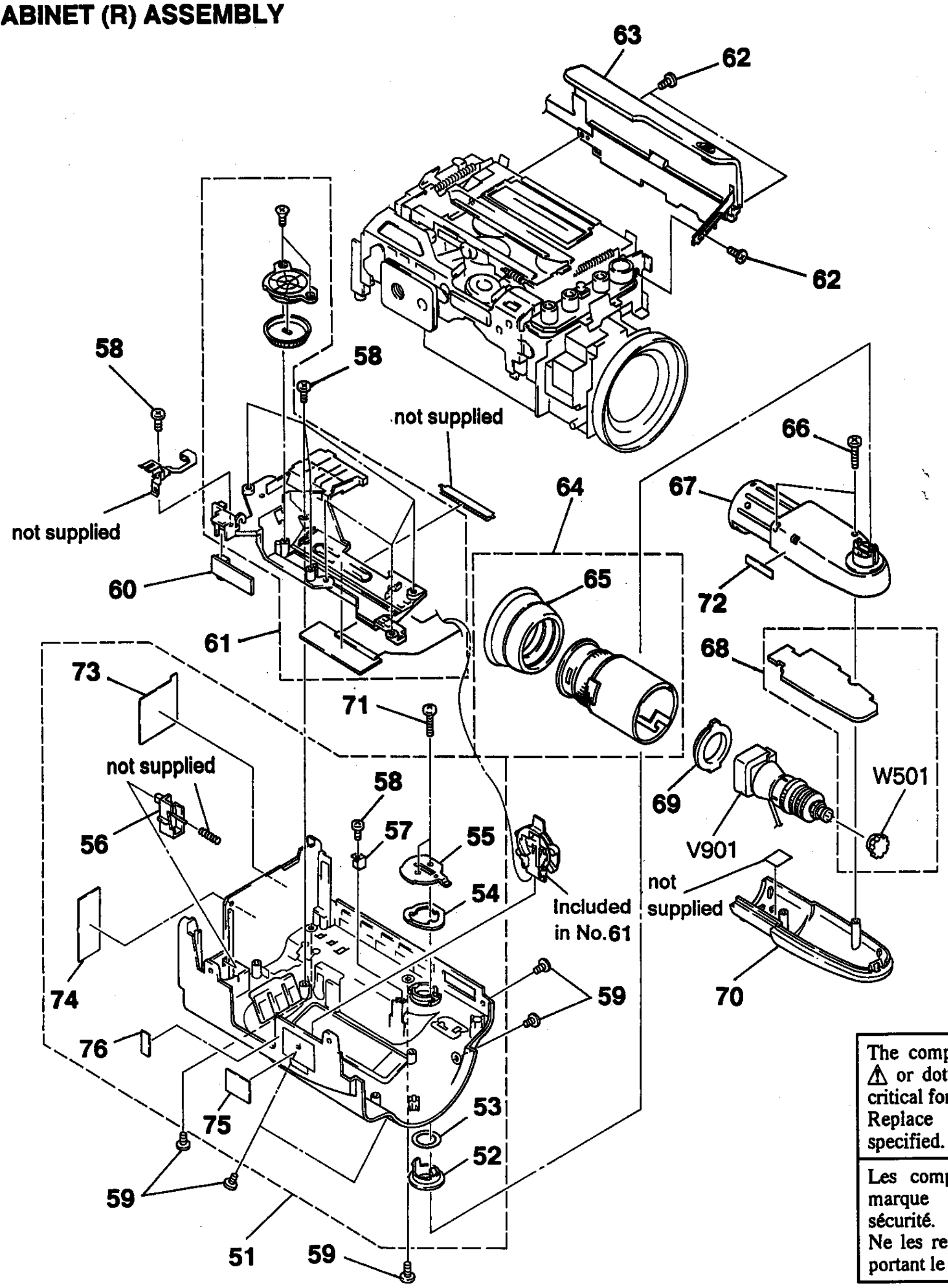
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

5-1. CABINET (L) AND F PANEL ASSEMBLIES



Ref. No.	Part No.	Description	⚠ Remark
1	3-719-381-01	SCREW (M2X4)	
2	3-728-267-01	COVER, 3.5 JACK (MIC, PHONES)	
3	1-537-297-21	TERMINAL BOARD, BATTERY	
4	A-7081-937-A	CABINET (L) BLOCK ASSY	
5	3-736-807-01	BELT, GRIP	
6	3-942-950-01	BUTTON, S/S	
7	3-578-221-00	SPRING, COMPRESSION	
8	3-942-985-01	KNOB, STAND-BY	
9	3-736-364-01	SPRING	
10	3-736-338-01	BRACKET, BELT	
11	3-942-944-01	KNOB, IN OUT	
12	3-736-360-01	JOINT, LR	
13	3-942-953-01	HOLDER, STAND-BY KNOB	
14	3-669-480-11	+ PTPWH 2	
15	3-727-902-11	SCREW (M1.4), SPECIAL	
16	X-3941-447-1	LID ASSY, CASSETTE (TR101)	
16	X-3941-723-1	LID ASSY, CASSETTE (TR805)	
* 17	3-703-713-41	STICKER, SONY SYMBOL (10)	
18	3-728-266-01	COVER, 2.5 JACK (REMOTE)	
19	1-542-180-11	MICROPHONE ASSY	
20	3-719-408-01	SCREW (B2), TAPPING, P3	
21	3-946-477-01	BUTTON, MICROPHONE	
* 22	A-7063-030-A	MA-109 BOARD, COMPLETE	
23	3-947-195-01	PLATE, GROUND, MC	
* 24	3-947-222-01	LABEL, MODEL NUMBER (U/C) (TR101)	
* 24	3-948-302-01	LABEL, MODEL NUMBER (E) (TR805)	
25	X-3941-445-1	PANEL ASSY, F	
26	X-3941-358-1	CAP ASSY, LENS	
27	X-3941-494-1	CATCHER ASSY (F), RAY	
* 28	A-7071-551-A	RM-54 BOARD, COMPLETE	
29	1-944-055-11	HARNESS (CD-26)	
* 30	X-3941-616-1	COVER ASSY, LOWER, VA	
31	3-947-677-01	SCREW (1.7X4), TAPPING (B)	
32	3-942-986-01	COVER, JACK	
* 33	3-946-907-01	SHEET, NAME RING	
34	1-693-092-21	REMOTE COMMANDER (CAM CODER) (RMT-508)	
35	3-708-412-01	LID, BATTERY CASE, LITHIUM	
* 36	3-943-154-11	HOLDER, REMOTE CONTROL	
⚠F901	1-532-778-21	FUSE, MICRO (1.6A 125V)	
⚠F902	1-532-778-21	FUSE, MICRO (1.6A 125V)	
⚠F903	1-532-778-21	FUSE, MICRO (1.6A 125V)	

5-2. CABINET (R) ASSEMBLY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W501
69
56
57
55
V901
54
not supplied
Included in No.61
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59

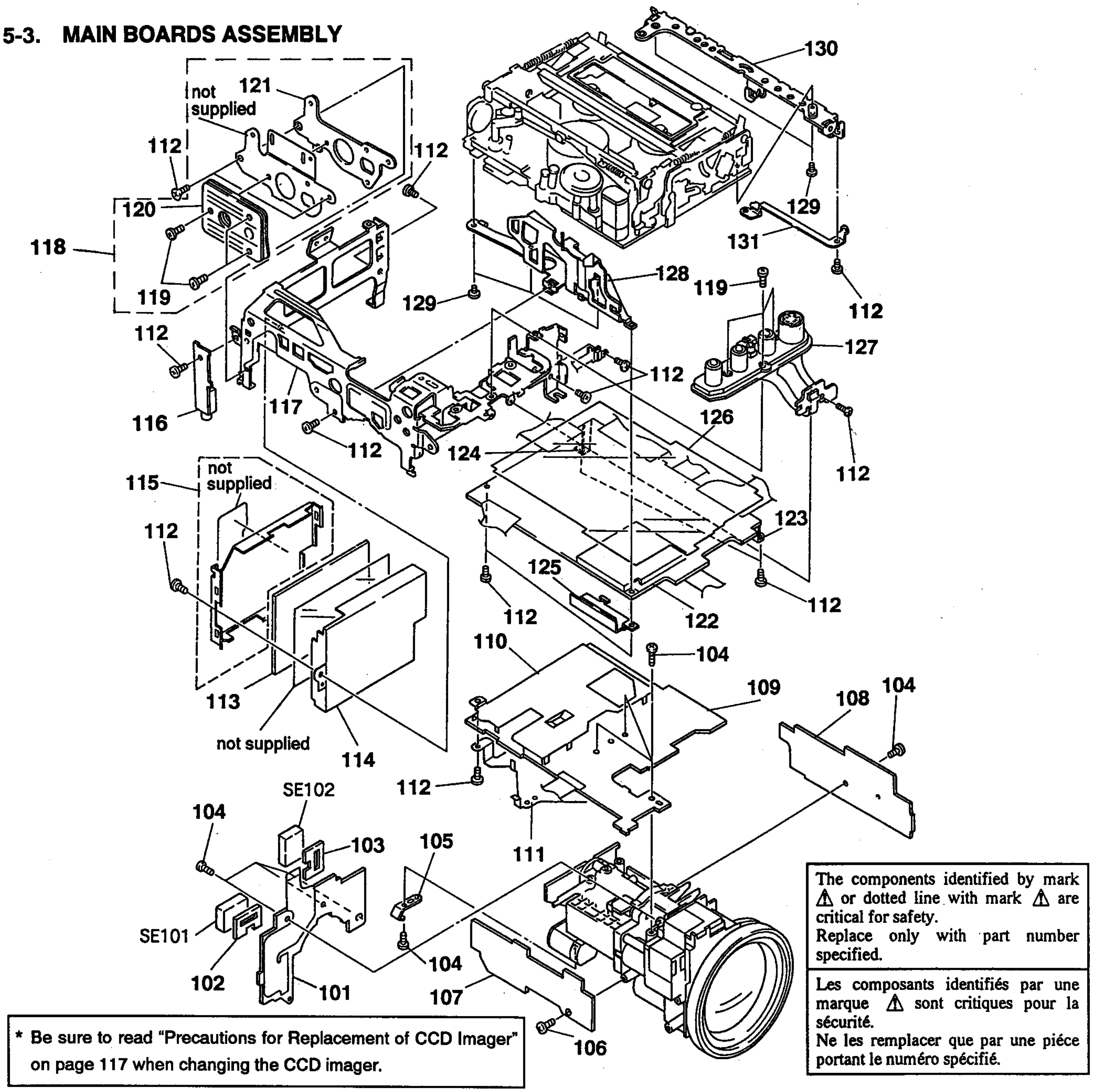
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
51	X-3941-444-1	CABINET (R) ASSY (TR101)	
51	X-3941-747-1	CABINET (R) ASSY (TR805)	
52	3-747-109-01	SLEEVE, EVF	
53	3-747-112-01	RING, TILT	
54	3-747-110-01	SPRING, LEAF, TILT	
55	3-747-111-01	PLATE, LOCK, TILT	
56	3-747-164-01	LEVER, RELEASE	
57	3-747-178-01	REINFORCEMENT, TILT LOCK	
58	3-719-601-01	SCREW (B2X5), TAPPING	
59	3-719-381-01	SCREW (M2X4)	
* 60	A-7071-550-A	LJ-6 BOARD, COMPLETE	
61	1-466-689-21	SWITCH BLOCK, CONTROL (CF-4)	
62	3-713-786-51	SCREW (M2X3)	
63	1-466-688-51	SWITCH BLOCK, COTROL (FK-4)	
64	X-3941-603-1	HOLDER ASSY, FINDER	

Ref. No.	Part No.	Description	Remark
65	3-946-426-01	EYE CUP	
66	3-713-790-31	SCREW (M2X8), TAPPING, P3	
67	X-3941-292-1	CABINET (L) ASSY, EVF	
* 68	A-7063-183-A	VF-42 BOARD, COMPLETE (3120)	
69	3-747-116-01	COVER, CRT	
70	3-943-077-81	CABINET (R), EVF	
71	3-740-546-01	SCREW (M2X10)	
* 72	3-744-894-11	LABEL, EVF	
* 73	3-945-964-01	LABEL (U), BATTERY FITTING	
74	3-703-845-01	LABEL (N) (U/C), MAIN CAUTION (TR101)	
* 75	3-704-256-01	LABEL, CAUTION (TR101)	
* 76	3-704-367-01	LABEL (TR101)	
⚠V901	1-452-565-11	CRT ASSY (M01KTA80WB)	
⚠W501	1-540-019-21	SOCKET ASSY, CRT	

5-3. MAIN BOARDS ASSEMBLY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SE101
104
102
101
107
106

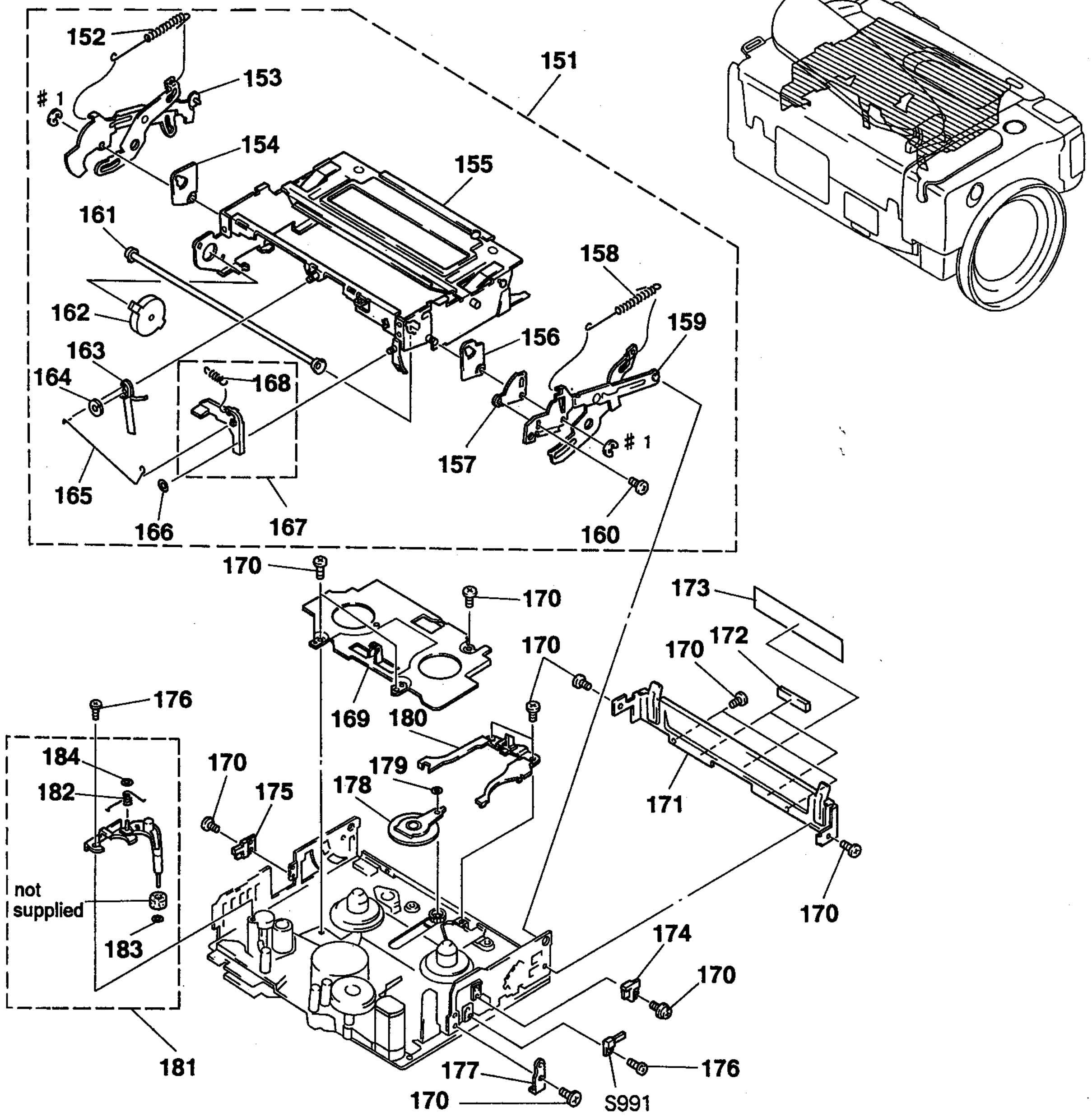
* Be sure to read "Precautions for Replacement of CCD Imager" on page 117 when changing the CCD imager.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
* 101	A-7063-024-A	SE-22 BOARD, COMPLETE	
* 102	3-947-851-01	SHEET, SENSOR	
* 103	3-947-851-11	SHEET, SENSOR	
104	3-719-601-01	SCREW (B2X5), TAPPING	
105	3-946-471-01	BRACKET, LENS	
106	3-947-491-01	SCREW (B) (2X4), TAPPING	
* 107	A-7063-025-A	VD-21 BOARD, COMPLETE	
* 108	A-7063-029-A	AU-118 BOARD, COMPLETE	
* 109	A-7063-087-A	VC-103 BOARD, COMPLETE	
* 110	3-946-451-01	CASE (LOWER), SHIELD, VC	
111	3-947-675-01	HEAT SINK, VC	
112	3-713-786-51	SCREW (M2X3)	
*⚠113	A-7063-028-A	DD-38 BOARD, COMPLETE (DC-DC CONVERTER UNIT)	
114	3-946-454-01	CASE(MAIN), SHIELD, DD CONVERTER	
115	X-3941-582-1	DD CONVERTER (LID) ASSY	
* 116	A-7071-552-A	HJ-13 BOARD, COMPLETE	
117	X-3941-343-1	FRAME ASSY, MD	
118	X-3941-345-1	FRAME ASSY, TRIPOD	
119	3-719-381-01	SCREW (M2X4)	
120	3-736-396-51	SCREW, TRIPOD	
121	3-946-462-01	FRAME, TRIPOD	
* 122	A-7063-257-A	VS-84 BOARD, COMPLETE	
* 123	3-946-456-01	PLATE (L), GROUND, VS	
* 124	3-942-939-01	PLATE (R), GROUND, VS	
* 125	3-942-936-01	SHIELD, RP CONNECTOR	
126	3-946-457-01	SHEET, HEAT INSULATING, VS	
127	1-537-407-11	JACK BOARD	
128	X-3941-344-1	FRAME (LOWER) ASSY	
129	3-703-816-41	SCREW (M1.4X2.5), SPECIAL HEAD	
130	3-946-459-01	FRAME (UPPER)	
131	3-946-461-01	REINFORCEMENT, VF	
SE101	1-466-700-11	SENSOR, ANGLE SPEED (YS)	
SE102	1-466-700-11	SENSOR, ANGLE SPEED (PS)	

5-4. CASSETTE COMPARTMENT HOLDER ASSEMBLY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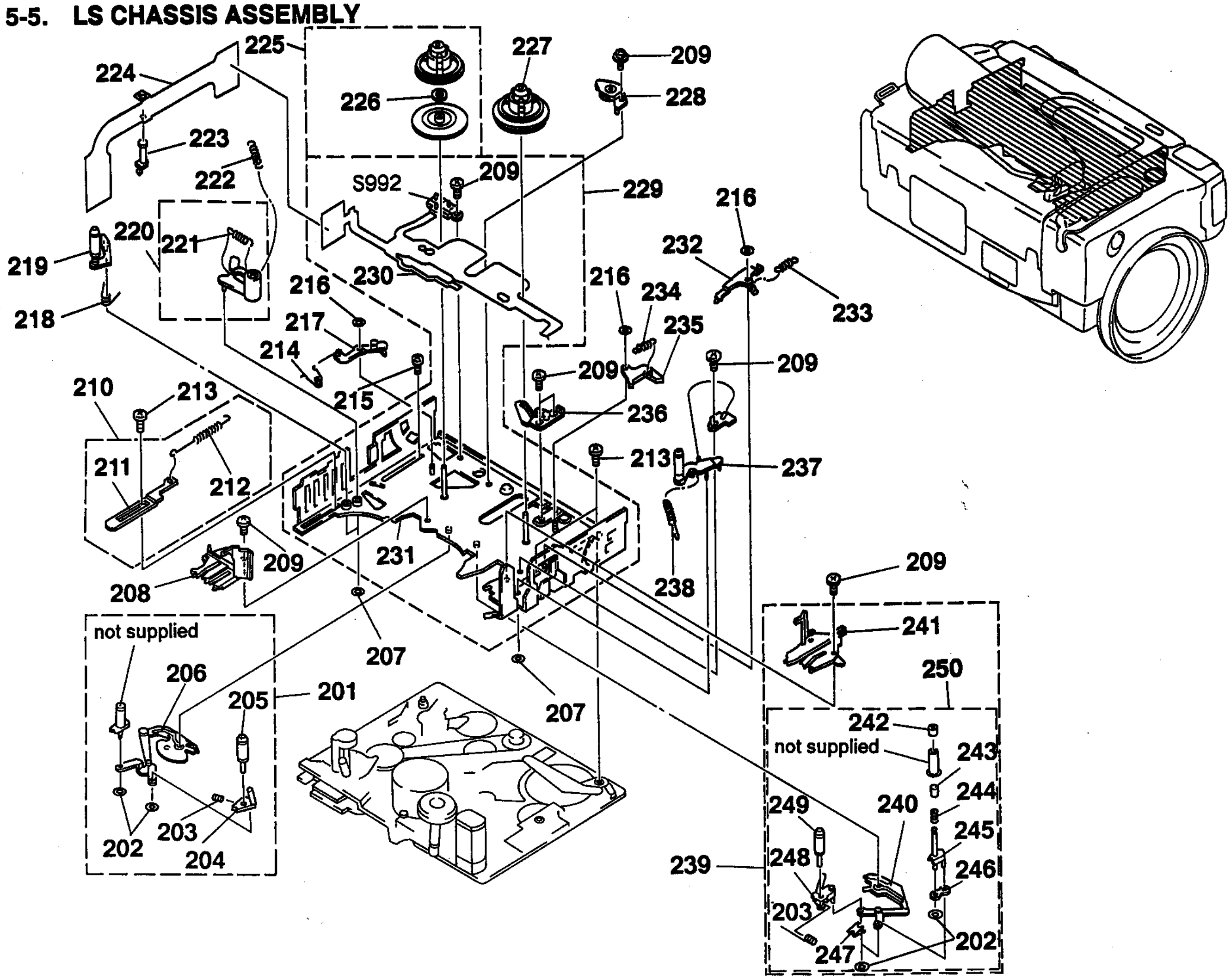
S991

Ref. No.	Part No.	Description	Remark
151	A-7040-256-A	HOLDER BLOCK ASSY (4)	
152	3-739-872-01	SPRING, TENSION	
153	X-3940-718-1	ARM (T) ASSY (4), F	
154	3-728-145-01	BEARING (T), MIDWAY GEAR	
155	X-3940-719-1	HOLDER ASSY (4)	
156	3-728-146-01	BEARING (S), MIDWAY GEAR	
157	3-739-808-01	PLATE (2), ADJUSTMENT, C ARM	
158	3-739-873-01	SPRING, TENSION	
159	X-3940-717-1	ARM (S) ASSY (4), F	
160	3-728-126-01	SCREW (M1.4X2), SPECIAL HEAD	
161	X-3727-920-1	GEAR ASSY, MIDWAY	
162	X-3739-809-1	DAMPER ASSY (2)	
163	X-3940-991-1	PROTECTOR ASSY (2), T	
164	3-749-304-01	WASHER, STOPPER	
165	3-728-277-01	BAR, JOINT	
166	3-331-007-11	WASHER	
167	A-7040-164-A	ARM BLOCK ASSY, TP	
168	3-509-127-00	SPRING, TENSION	
169	3-728-227-01	BASE, LED	
170	3-728-103-11	SCREW (M1.4X1.6), SPECIAL HEAD	
171	3-943-055-01	FRAME (L), LS	
* 172	3-736-841-02	SPACER, FK	
173	3-943-701-01	LABEL, CAUTION	
174	3-727-957-01	HOLDER (S), SENSOR	
175	3-727-954-01	HOLDER (T), SENSOR	
176	3-728-148-11	SCREW (M1.4X2.5), SPECIAL HEAD	
177	3-727-946-01	SUPPORT, LS	
178	X-3727-926-1	ARM ASSY, GEAR	
179	3-315-414-31	WASHER	
180	X-3940-087-1	BASE ASSY, RL	
181	A-7040-264-D	ROLLER BLOCK ASSY, HC	
182	3-943-439-02	SPRING, TORSION	
183	3-321-393-11	WASHER, STOPPER	
184	3-943-533-01	WASHER, STOPPER	
S991	1-572-611-11	SWITCH, LEAF (C LOCK)	

5-5. LS CHASSIS ASSEMBLY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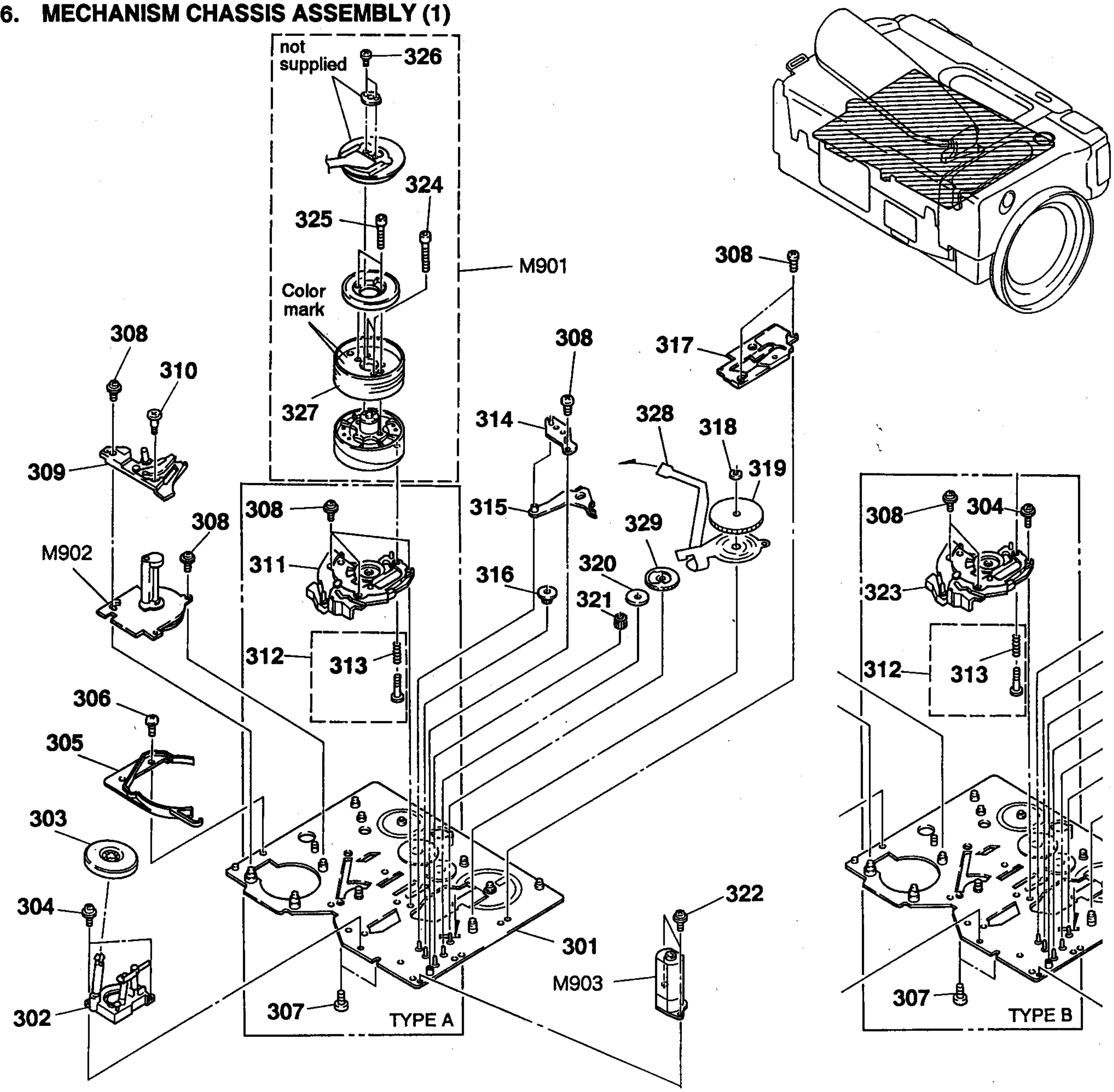
Ref. No.	Part No.	Description	Remark
201	A-7040-148-A	ARM (T) BLOCK ASSY, GUIDE	
202	3-331-007-11	WASHER	
203	3-728-290-01	SCREW (M1.2)	
204	X-3727-947-1	BASE ASSY, TG7	
205	X-3727-994-1	ROLLER ASSY, TG8	
206	X-3727-940-1	ARM (T) ASSY, GUIDE	
207	3-315-414-31	WASHER	
208	3-728-244-01	RAIL (T), GUIDE	
209	3-728-103-11	SCREW (M1.4X1.6), SPECIAL HEAD	
210	A-7040-150-A	SLIDER BLOCK ASSY, CAM	
211	3-728-089-01	SLIDER, CAM	
212	3-727-936-01	SPRING, TENSION	
213	3-941-601-01	SCREW (M1.4X2.5), SPECIAL HEAD	
214	3-732-068-01	SPRING (JD), RATCHET	
215	3-732-085-01	SCREW (1.2X1.6), SPECIAL HEAD	
216	3-728-091-01	WASHER, STOPPER	
217	X-3728-005-1	RATCHET ASSY (JD), T	
218	3-727-939-01	SPRING (JD), TORSION	
219	A-7040-151-A	ARM BLOCK ASSY, TG11	
220	A-7040-240-A	ARM BLOCK ASSY (JD), PINCH	
221	3-727-927-01	SPRING (POWER TENSION), TENSION	
222	3-732-089-01	SPRING (JD), TENSION	
223	3-739-807-01	SHAFT (2), FLEXIBLE ROTARY	
224	1-639-334-11	FP-422 FLEXIBLE BOARD	
225	X-3727-951-2	TABLE ASSY, REEL, TAKE-UP	
226	3-701-439-11	WASHER	
227	X-3727-952-1	TABLE ASSY, REEL, SUPPLY	
228	X-3727-914-4	CLUTCH ASSY, ONEWAY	
229	A-7010-365-A	MD ASSY (1)	
230	A-7062-792-A	FP-423 BLOCK ASSY	
231	X-3940-186-1	CHASSIS ASSY (S), LS	
232	3-732-077-01	RATCHET (JD), S	
233	3-732-076-01	SPRING (JD), TENSION	
234	3-732-078-01	SPRING (JD), TENSION	
235	3-732-079-01	ARM (JD), S SOFT	
236	3-728-206-01	PLATE, CAM, LS	
237	X-3749-001-1	ARM ASSY (JD), TG1	
238	3-940-616-03	SPRING (JD), TENSION	
239	A-7040-263-A	RAIL(S)BLOCK ASSY(3)(JD),GUIDE	
240	X-3727-941-1	ARM (S) ASSY, GUIDE	
241	3-728-226-01	RAIL (S) (JD), GUIDE	
242	3-943-822-01	FLANGE (P), TG4 UPPER	
243	3-728-048-01	SLEEVE, TG4	
244	3-728-023-01	SPRING, COMPRESSION	
245	X-3727-936-2	BASE ASSY, TG4	
246	3-728-053-01	PLATE, UNDER, TG4	
247	3-728-062-01	SPRING (6GB), LEAF	
248	X-3727-948-1	BASE ASSY, TG6	
249	X-3940-733-1	ROLLER ASSY (3), TG5	
250	A-7040-262-C	ARM (S) BLOCK ASSY (3), GUIDE	
S992	1-572-802-12	SWITCH, PUSH (3 KEY) (REC PROOF, ME/MP, Hi-8 MP)	

5-6. MECHANISM CHASSIS ASSEMBLY (1)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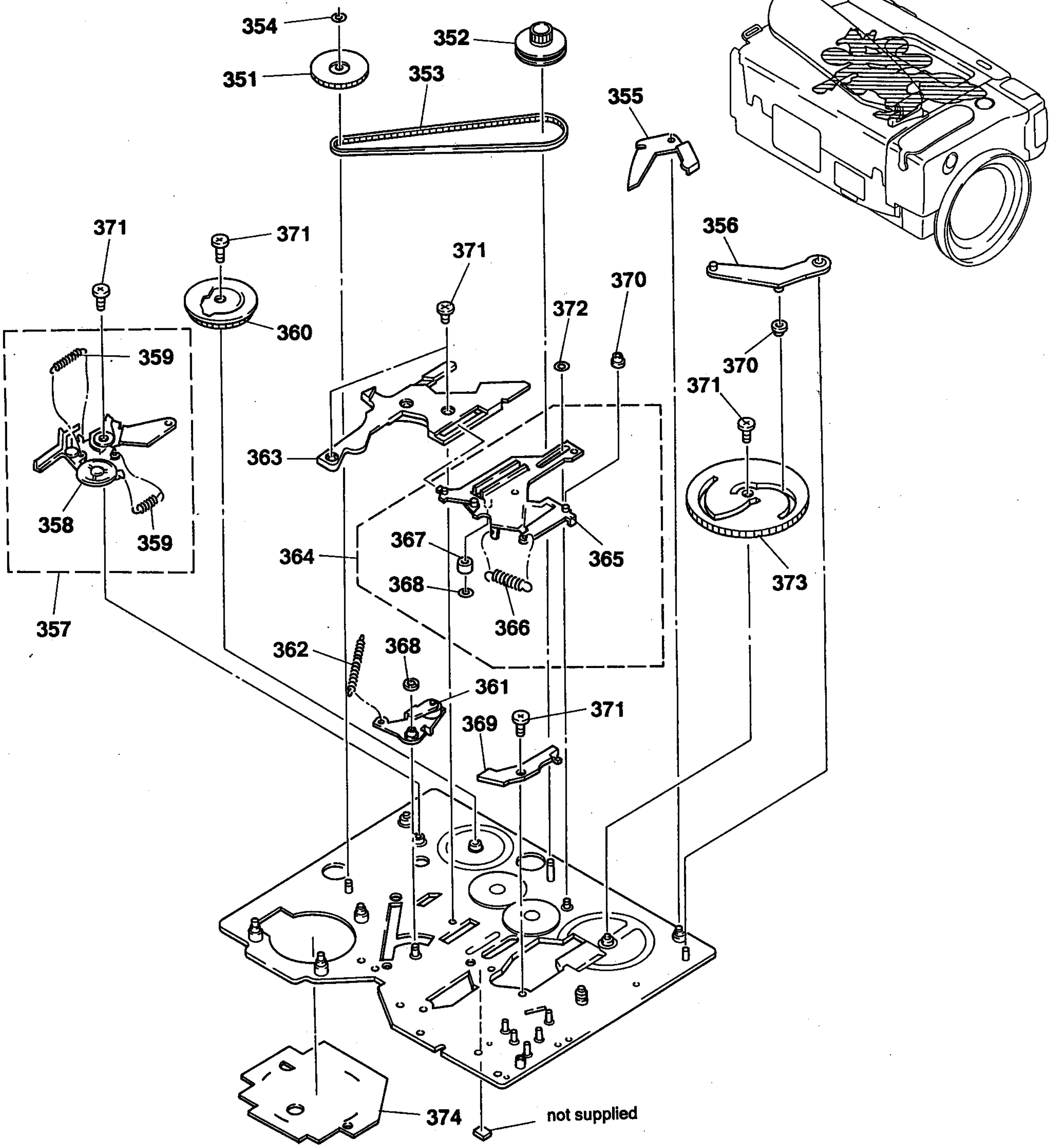
TYPE B

Ref. No.	Part No.	Description	Remark
301	A-7040-154-P	CHASSIS ASSY, MECHANICAL	
302	A-7040-251-F	BASE (1) BLOCK ASSY (3), RAIL	
303	3-943-088-01	WHEEL, FLY, IP	
304	3-703-816-51	SCREW (M1.4X3.5), SPECIAL HEAD	
305	3-732-064-01	COVER, ROTOR	
306	3-728-126-01	SCREW (M1.4X2), SPECIAL HEAD	
307	3-728-108-01	SCREW (M1.4X4.5)	
308	3-728-148-11	SCREW (M1.4X2.5), SPECIAL HEAD	
309	X-3941-027-2	RAIL (BASE) (3) ASSY (3), GUIDE	
310	3-732-084-01	SCREW (M1.4), SPECIAL HEAD	
* 311	A-7040-222-D	BASE (M) BLOCK ASSY, DRUM (TYPE A)	
312	X-3728-009-2	SCREW ASSY, FITTING	
313	3-743-633-01	SPRING, COMPRESSION	
314	3-728-119-01	RETAINER, GEAR	
315	X-3727-906-1	ARM ASSY	
316	X-3727-903-1	GEAR ASSY, NO.1	
317	3-728-231-06	BASE, TG-1 CAM	
318	3-579-788-01	WASHER, STOPPER	
319	X-3727-915-1	GEAR ASSY, MODE	
320	X-3727-904-1	GEAR ASSY, NO.2	
321	3-728-149-01	GEAR, NO.0	
322	3-732-087-31	SCREW (M1.4X1.8), SPECIAL HEAD	
* 323	A-7040-203-C	BASE (A) BLOCK ASSY, DRUM (TYPE B)	
324	3-727-809-02	SCREW (M1.4X5), HEXAGONAL HOLE	
325	3-727-807-03	SCREW (M1.7X3.3), HEXAGONAL HOLE	
326	3-728-108-41	SCREW (M1.4X2.7)	
327	A-7049-495-A	DRUM ASSY, UPPER, ROTARY (DGR-89-R-(1)) (COLOR MARK; GREEN, GREEN/RED, BLACK, BLACK/RED)	
327	A-7049-498-A	DRUM ASSY, UPPER, ROTARY (DGR-89-R-(2)) (COLOR MARK; RED, RED/RED, BLUE, BLUE/RED)	
328	1-627-721-16	FP-114 FLEXIBLE BOARD	
329	3-728-189-02	GEAR, NO.3	
M901	A-7048-559-A	DRUM BLOCK ASSY (DGH-89A-R)	
M902	8-835-329-12	MOTOR, DC U-21A (CAPSTAN)	
M903	1-541-607-21	MOTOR, DC (LA12G-344VA) (LOADING)	

5-7. MECHANISM CHASSIS ASSEMBLY (2)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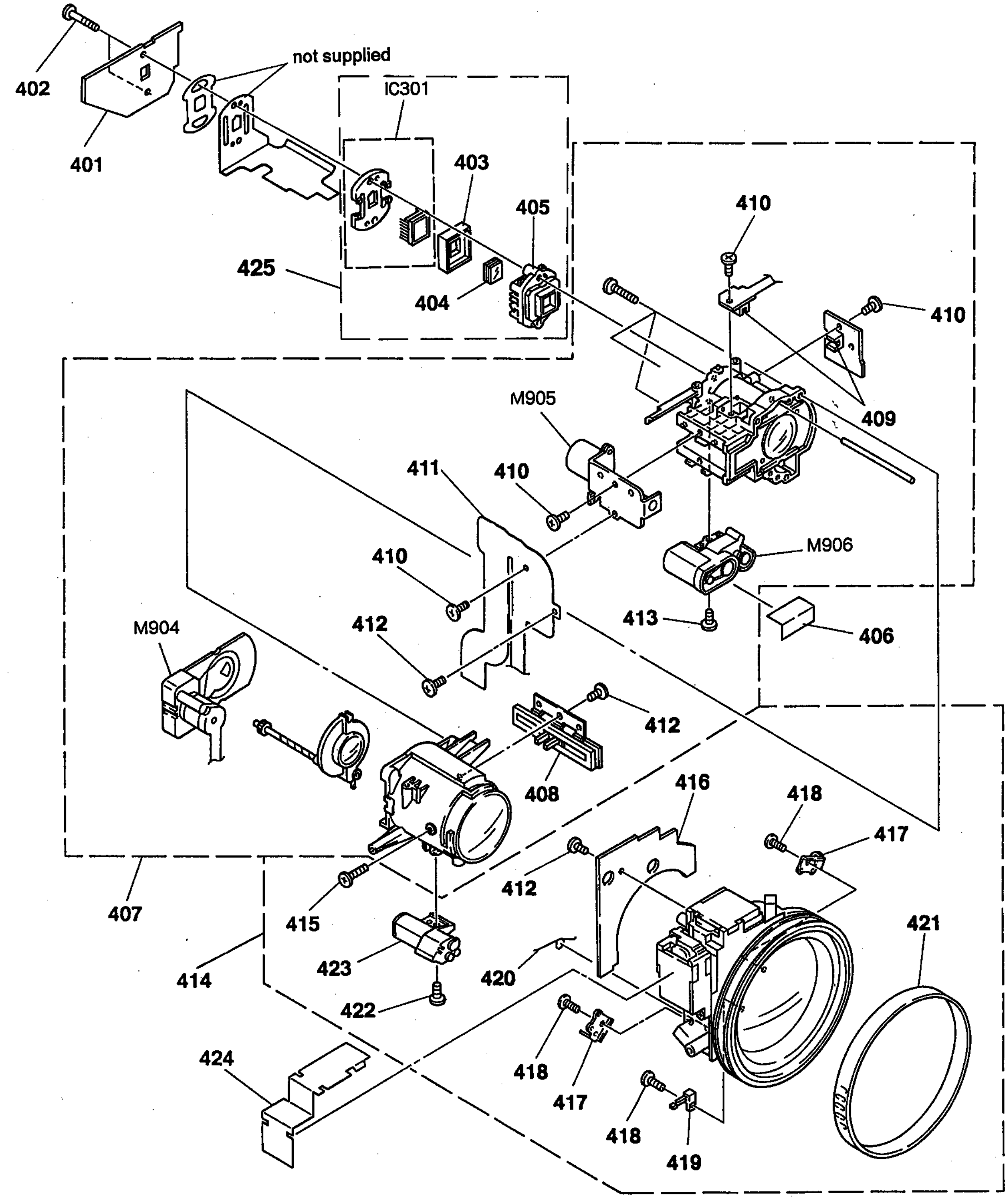
Ref. No.	Part No.	Description	Remark
351	X-3727-930-1	GEAR ASSY, CONVERSION	
352	X-3727-931-1	PULLEY ASSY, MIDWAY	
353	3-728-212-01	BELT, RELAY	
354	3-728-091-01	WASHER, STOPPER	
355	3-728-154-01	ARM, EJ	
356	3-941-980-01	ARM (T), LS	
357	A-7040-152-A	ARM BLOCK ASSY, PINCH PRESS	
358	X-3940-335-1	ARM ASSY, PINCH PRESS	
359	3-728-065-01	SPRING, TENSION	
360	3-728-190-01	CAM (B)	
361	X-3727-924-2	ARM ASSY, GUIDE LOCK	
362	3-728-015-01	SPRING (POWER TENSION),TENSION	
363	3-728-228-03	SUPPORT (T), GL	
364	A-7040-153-A	SLIDER BLOCK ASSY, GL	
365	X-3727-942-1	SLIDER ASSY, GL	
366	3-727-929-01	SPRING (POWER TENSION),TENSION	
367	3-728-144-01	ROLLER, GL	
368	3-331-007-11	WASHER	
369	3-728-213-01	SUPPORT (S), GL	
370	3-728-109-01	ROLLER, LS	
371	3-728-148-11	SCREW (M1.4X2.5), SPECIAL HEAD	
372	3-315-384-31	WASHER, STOPPER	
373	3-728-208-02	CAM (A)	
374	3-942-901-01	COVER (L), CAPSTAN	

5-8. CCD ASSEMBLY AND ZOOM LENS (VCL-6210WB) ASSEMBLIES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IC301
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M904
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Ref. No.	Part No.	Description	Remark
* 401	A-7071-549-A	CD-72 BOARD, COMPLETE	
402	3-947-268-01	SCREW (P TIGHT) (2), TAPPING	
403	3-946-857-01	RUBBER (S), SEAL	
404	1-547-529-21	FILTER BLOCK, OPTICAL (OFB-03-03)	
405	3-946-856-01	ADAPTOR (H), CCD FITTING	
* 406	3-948-061-01	COVER, Z GEAR	
407	3-708-436-01	LENS BLOCK	
408	3-708-446-01	METER, POTENTIAL	
409	3-708-435-01	PHOTO INTERRUPTER	
410	3-707-946-01	SCREW	
411	3-708-441-01	FLEXIBLE	
412	3-708-053-01	SCREW, FB FITTING	
413	3-708-450-01	SCREW, PZ	
414	3-708-437-01	VAP BLOCK	
415	3-708-449-01	SCREW, VAP FITTING	
416	3-708-440-01	CS BOARD	
417	3-708-438-01	BRACKET	
418	3-707-947-01	SCREW, MASTER LENS	
419	3-708-447-01	SWITCH, LEAF	
420	3-708-448-01	SP, MECHANICAL LOCK	
421	3-708-439-01	KNURL, (F) RUBBER	
422	3-708-249-01	SCREW, AF BLOCK	
423	3-708-444-01	MOTOR ASSY, INITIALISE	
424	3-947-593-01	COVER, ACTUATOR	
425	A-7030-299-A	CCD ASSY (AUTO)	
M904	3-708-445-01	METER, IG (IRIS)	
M905	3-708-443-01	MOTOR ASSY, STEPPING (FOCUS)	
M906	3-708-442-01	MOTOR ASSY, PZ (ZOOM)	
IC301	A-7030-298-A	CCD BLOCK ASSY (AUTO) (CCD IMAGER)	

SECTION 6

ELECTRICAL PARTS LIST

AU-118

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL:Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F:nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u:μ, for example:
  uA..: μA.. uPA..: μPA..
  uPB..: μPB.. uPC..: μPC.. uPD..: μPD..
- CAPACITORS
  uF: μF
- COILS
  uH: μH

When indicating parts by reference number, please include the board.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
*	A-7063-029-A	AU-118 BOARD, COMPLETE ************************	
		(Ref No. 6,000 Series)	
	1-691-551-11	PIN, CONNECTOR (SMD) 8P	
		< CAPACITOR >	
C601	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V
C602	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V
C603	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V
C604	1-162-957-11	CERAMIC CHIP 220PF 5%	50V
C605	1-162-957-11	CERAMIC CHIP 220PF 5%	50V
C606	1-164-633-11	CERAMIC CHIP 0.1uF 10%	25V
C607	1-164-633-11	CERAMIC CHIP 0.1uF 10%	25V
C608	1-162-957-11	CERAMIC CHIP 220PF 5%	50V
C609	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C610	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C611	1-163-989-11	CERAMIC CHIP 0.033uF 10%	25V
C612	1-162-967-11	CERAMIC CHIP 0.0033uF 10%	50V
C613	1-162-957-11	CERAMIC CHIP 220PF 5%	50V
C614	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C615	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C616	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C617	1-163-989-11	CERAMIC CHIP 0.033uF 10%	25V
C618	1-162-967-11	CERAMIC CHIP 0.0033uF 10%	50V
C619	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C620	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C621	1-126-209-11	ELECT CHIP 100uF 20%	4V
C622	1-135-181-21	TANTALUM CHIP 4.7uF 20%	6.3V
C623	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V
C624	1-135-202-21	TANTAL. CHIP 22uF 20%	4V
C625	1-163-809-11	CERAMIC CHIP 0.047uF 10%	25V
C626	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C627	1-135-181-21	TANTALUM CHIP 4.7uF 20%	6.3V
C628	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V
C629	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V
C630	1-135-202-21	TANTAL. CHIP 22uF 20%	4V
C631	1-163-809-11	CERAMIC CHIP 0.047uF 10%	25V
C632	1-135-091-00	TANTALUM CHIP 1uF 20%	16V
C633	1-135-091-00	TANTALUM CHIP 1uF 20%	16V
C634	1-162-965-11	CERAMIC CHIP 0.0015uF 10%	50V
C635	1-162-965-11	CERAMIC CHIP 0.0015uF 10%	50V
C636	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C637	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C638	1-162-968-11	CERAMIC CHIP 0.0047uF 10%	50V
C639	1-162-968-11	CERAMIC CHIP 0.0047uF 10%	50V
C640	1-162-949-11	CERAMIC CHIP 47PF 5%	50V
C641	1-162-949-11	CERAMIC CHIP 47PF 5%	50V
C644	1-162-957-11	CERAMIC CHIP 220PF 5%	50V
C645	1-162-957-11	CERAMIC CHIP 220PF 5%	50V
C646	1-162-952-11	CERAMIC CHIP 82PF 5%	50V
C647	1-135-181-21	TANTALUM CHIP 4.7uF 20%	6.3V
C648	1-135-181-21	TANTALUM CHIP 4.7uF 20%	6.3V
C649	1-135-091-00	TANTALUM CHIP 1uF 20%	16V
C650	1-135-091-00	TANTALUM CHIP 1uF 20%	16V
C651	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V
C652	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V
C653	1-162-969-11	CERAMIC CHIP 0.0068uF 10%	25V
C654	1-162-969-11	CERAMIC CHIP 0.0068uF 10%	25V
C655	1-162-977-11	CERAMIC CHIP 0.0018uF 10%	50V
C656	1-126-205-11	ELECT CHIP 47uF 20%	6.3V
C657	1-162-977-11	CERAMIC CHIP 0.0018uF 10%	50V
C658	1-126-205-11	ELECT CHIP 47uF 20%	6.3V
C659	1-126-205-11	ELECT CHIP 47uF 20%	6.3V
C660	1-126-205-11	ELECT CHIP 47uF 20%	6.3V
C661	1-135-091-00	TANTALUM CHIP 1uF 20%	16V
C662	1-135-091-00	TANTALUM CHIP 1uF 20%	16V
C663	1-162-966-11	CERAMIC CHIP 0.0022uF 10%	50V
C664	1-162-966-11	CERAMIC CHIP 0.0022uF 10%	50V
C665	1-126-205-11	ELECT CHIP 47uF 20%	6.3V
C666	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C667	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C668	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C669	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V
C670	1-135-202-21	TANTAL. CHIP 22uF 20%	4V
C671	1-135-202-21	TANTAL. CHIP 22uF 20%	4V
C672	1-135-091-00	TANTALUM CHIP 1uF 20%	16V
C673	1-135-091-00	TANTALUM CHIP 1uF 20%	16V
C674	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V

Ref. No.	Part No.	Description			Remark
C675	1-135-202-21	TANTAL. CHIP	22uF	20%	4V
C676	1-135-202-21	TANTAL. CHIP	22uF	20%	4V
C677	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C678	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C679	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C680	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C681	1-135-202-21	TANTAL. CHIP	22uF	20%	4V
C682	1-135-202-21	TANTAL. CHIP	22uF	20%	4V
C683	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C684	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C685	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C686	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C687	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C688	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C689	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C690	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C691	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C692	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C693	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C694	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C695	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C696	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C697	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C698	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C699	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
		< CONNECTOR >			
CN602	1-580-056-21	PIN, CONNECTOR 3P			
CN603	1-580-252-31	CONNECTOR, BOARD TO BOARD 30P			
		< FILTER >			
FL601	1-236-837-21	FILTER, BAND PASS			
FL602	1-236-838-21	FILTER, BAND PASS			
		< IC >			
IC601	8-759-823-19	IC CXA1488R			
IC602	8-759-823-19	IC CXA1488R			
IC603	8-759-823-21	IC CXA1536QQ			
IC604	8-759-008-67	IC MC14066BF			
		< TRANSISTOR >			
Q601	8-729-905-23	TRANSISTOR 2SA1576-R			
Q603	8-729-402-81	TRANSISTOR XN4501			
Q604	8-729-402-81	TRANSISTOR XN4501			
Q605	8-729-905-18	TRANSISTOR DTC144EU			
Q606	8-729-402-81	TRANSISTOR XN4501			
Q607	8-729-905-12	TRANSISTOR DTA144EU			
Q608	8-729-905-18	TRANSISTOR DTC144EU			

Ref. No.	Part No.	Description			Remark
		< RESISTOR >			
R602	1-216-837-11	METAL CHIP	22K	5%	1/16W
R604	1-216-837-11	METAL CHIP	22K	5%	1/16W
R605	1-216-611-11	METAL CHIP	22	0.5%	1/10W
R606	1-216-859-11	METAL GLAZE	1.5M	5%	1/16W
R607	1-216-859-11	METAL GLAZE	1.5M	5%	1/16W
R608	1-216-833-11	METAL CHIP	10K	5%	1/16W
R609	1-216-835-11	METAL CHIP	15K	5%	1/16W
R610	1-216-833-11	METAL CHIP	10K	5%	1/16W
R611	1-216-840-11	METAL CHIP	39K	5%	1/16W
R612	1-216-840-11	METAL CHIP	39K	5%	1/16W
R613	1-216-836-11	METAL CHIP	18K	5%	1/16W
R614	1-216-836-11	METAL CHIP	18K	5%	1/16W
R615	1-216-845-11	METAL CHIP	100K	5%	1/16W
R616	1-216-845-11	METAL CHIP	100K	5%	1/16W
R617	1-216-864-11	METAL CHIP	0	5%	1/16W
R618	1-216-864-11	METAL CHIP	0	5%	1/16W
R619	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R620	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R621	1-216-821-11	METAL CHIP	1K	5%	1/16W
R622	1-216-821-11	METAL CHIP	1K	5%	1/16W
R624	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R625	1-216-817-11	METAL CHIP	470	5%	1/16W
R628	1-216-839-11	METAL CHIP	33K	5%	1/16W
R629	1-216-839-11	METAL CHIP	33K	5%	1/16W
R630	1-216-864-11	METAL CHIP	0	5%	1/16W
R631	1-216-864-11	METAL CHIP	0	5%	1/16W
R632	1-216-833-11	METAL CHIP	10K	5%	1/16W
R633	1-216-833-11	METAL CHIP	10K	5%	1/16W
R634	1-216-810-11	METAL CHIP	120	5%	1/16W
R635	1-216-810-11	METAL CHIP	120	5%	1/16W
R636	1-216-848-11	METAL CHIP	180K	5%	1/16W
R640	1-216-821-11	METAL CHIP	1K	5%	1/16W
R641	1-216-845-11	METAL CHIP	100K	5%	1/16W
R642	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R643	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R644	1-218-867-11	METAL CHIP	6.8K	0.50%	1/16W
R645	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R646	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R647	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R648	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R649	1-216-817-11	METAL CHIP	470	5%	1/16W
R650	1-218-863-11	METAL CHIP	4.7K	0.50%	1/16W
R651	1-216-837-11	METAL CHIP	22K	5%	1/16W
R652	1-216-836-11	METAL CHIP	18K	5%	1/16W
R653	1-216-837-11	METAL CHIP	22K	5%	1/16W
R654	1-216-836-11	METAL CHIP	18K	5%	1/16W
R655	1-218-871-11	METAL CHIP	10K	0.50%	1/16W

Ref. No.	Part No.	Description	Remark
R656	1-216-813-11	METAL CHIP 220 5% 1/16W	
R658	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R659	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R660	1-216-819-11	METAL CHIP 680 5% 1/16W	
R661	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R662	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R663	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R664	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R665	1-216-864-11	METAL CHIP 0 5% 1/16W	
R666	1-216-819-11	METAL CHIP 680 5% 1/16W	
R667	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R668	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R669	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R670	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R671	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R672	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R673	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R674	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R675	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R676	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R677	1-216-849-11	METAL CHIP 220K 5% 1/16W	

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* A-7071-549-A CD-72 BOARD, COMPLETE

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(Ref No. 1,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description	Remark
C301	1-128-006-11	ELECT CHIP 4.7uF 20% 25V	
C302	1-128-013-11	ELECT CHIP 1uF 20% 50V	
C303	1-128-008-11	ELECT CHIP 3.3uF 20% 35V	
C305	1-162-637-11	CERAMIC CHIP 0.47uF 16V	
C306	1-126-607-11	ELECT CHIP 47uF 20% 4V	
C307	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C308	1-128-013-11	ELECT CHIP 1uF 20% 50V	
C309	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C310	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C312	1-135-145-11	TANTALUM CHIP 0.47uF 10% 35V	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN301	1-573-525-21	CONNECTOR, BOARD TO BOARD 16P	

< DIODE >

Ref. No.	Part No.	Description	Remark
D301	8-719-800-76	DIODE 1SS226	
D302	8-719-404-46	DIODE MA110	
D303	8-719-820-05	DIODE 1SS181	
D304	8-719-404-46	DIODE MA110	

< IC CONNECTOR >

Ref. No.	Part No.	Description	Remark
IC301	1-573-525-21	IC CONNECTOR, BOARD TO BOARD 16P	

< COIL >

Ref. No.	Part No.	Description	Remark
L301	1-412-032-11	INDUCTOR CHIP 100uH	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q301	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q302	8-729-903-10	TRANSISTOR FMW1	
Q303	8-729-232-86	TRANSISTOR 2SK1875	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R301	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R302	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R303	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R304	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R305	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R306	1-216-820-11	METAL CHIP 820 5% 1/16W	
R307	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R308	1-216-850-11	METAL CHIP 270K 5% 1/16W	
R309	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R310	1-216-809-11	METAL CHIP 100 5% 1/16W	
R311	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R313	1-216-864-11	METAL CHIP 0 5% 1/16W	

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* A-7063-183-A VF-42 BOARD, COMPLETE (3120)

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(Ref No. 8,000 Series)

Ref. No.	Part No.	Description	Remark
	1-540-019-21	SOCKET ASSY, CRT	
	3-942-888-01	HOLDER, LED	

< CAPACITOR >

Ref. No.	Part No.	Description	Remark
C501	1-126-176-11	ELECT 220uF 20% 10V	
C502	1-163-077-00	CERAMIC CHIP 0.1uF 10% 25V	
C503	1-163-109-00	CERAMIC CHIP 47PF 5% 50V	
⚠C504	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
⚠C505	1-164-715-11	CERAMIC CHIP 0.0068uF 5% 50V	
⚠C506	1-163-211-00	CERAMIC CHIP 0.0018uF 5% 50V	
C507	1-127-515-11	ELECT(SOLID) 47uF 20% 6.3V	
C508	1-164-611-11	CERAMIC CHIP 0.001uF 10% 500V	
C509	1-124-257-00	ELECT 2.2uF 20% 50V	
C510	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C511	1-126-090-11	ELECT 82uF 20% 10V	
C512	1-137-306-11	FILM CHIP 0.1uF 5% 16V	
C513	1-135-149-21	TANTALUM CHIP 2.2uF 20% 10V	
C514	1-131-381-00	TANTALUM 47uF 10% 10V	
C515	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remark
C516	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
		< CONNECTOR >			
* CN501	1-566-759-11	PIN, CONNECTOR (PC BOARD) 4P			
* CN502	1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P			
* CN503	1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P			
		< DIODE >			
D501	8-719-820-65	DIODE TLS221			
D502	8-719-984-02	LED BR4371F			
D503	8-719-400-20	DIODE MA152WA			
		< IC >			
IC501	8-759-420-01	IC AN2512S			
		< COIL >			
L501	1-408-976-21	INDUCTOR 33uH			
L502	1-408-785-21	INDUCTOR CHIP 47uH			
⚠L503	1-459-876-41	COIL, FERRITE (HLC)			
		< TRANSISTOR >			
Q501	8-729-120-28	TRANSISTOR 2SC1623-L5L6			
Q502	8-729-216-31	TRANSISTOR 2SA1163-G			
Q503	8-729-120-28	TRANSISTOR 2SC1623-L5L6			
Q504	8-729-106-68	TRANSISTOR 2SD1615A-GP			
		< RESISTOR >			
R501	1-216-033-00	METAL CHIP	220	5%	1/10W
R502	1-216-041-00	METAL CHIP	470	5%	1/10W
R503	1-216-041-00	METAL CHIP	470	5%	1/10W
R504	1-216-324-11	METAL GLAZE	10K	1%	1/10W
R505	1-218-150-11	METAL GLAZE	1.2K	1%	1/10W
R506	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R507	1-216-047-00	METAL CHIP	820	5%	1/10W
R508	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R509	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R510	1-216-001-00	METAL CHIP	10	5%	1/10W
R511	1-216-121-00	METAL CHIP	1M	5%	1/10W
R512	1-216-131-11	METAL CHIP	2.7M	5%	1/10W
R513	1-216-101-00	METAL CHIP	150K	5%	1/10W
R514	1-216-121-00	METAL CHIP	1M	5%	1/10W
R515	1-216-131-11	METAL CHIP	2.7M	5%	1/10W
R516	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R517	1-216-025-00	METAL CHIP	100	5%	1/10W
R518	1-216-308-00	METAL CHIP	4.7	5%	1/10W
R519	1-216-336-11	METAL CHIP	47K	1%	1/10W
R520	1-216-099-00	METAL CHIP	120K	5%	1/10W
R521	1-216-121-00	METAL CHIP	1M	5%	1/10W
R522	1-216-160-00	METAL GLAZE	27	5%	1/8W
R523	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R524	1-216-113-00	METAL CHIP	470K	5%	1/10W
R525	1-216-097-00	METAL CHIP	100K	5%	1/10W
		< VARIABLE RESISTOR >			
RV501	1-241-596-11	RES, ADJ, METAL GRAZE 47K			
RV502	1-241-590-11	RES, ADJ, METAL GRAZE 470			
RV503	1-241-592-11	RES, ADJ, METAL GRAZE 2.2K			
RV504	1-228-762-00	RES, ADJ, METAL GLAZE 1M			
		< TRANSFORMER >			
⚠T501	1-439-486-11	TRANSFORMER ASSY, FLYBACK			
		< THERMISTOR >			
TH501	1-809-350-21	THERMISTOR, NTC (2125)			
		< FLAT CABLE >			
⚠W501	1-540-019-21	SOCKET ASSY, CRT			

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⚠ * A-7063-028-A DD-38 BOARD, COMPLETE

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(Ref No. 9,000 Series)

Ref. No.	Part No.	Description			Remark
		< CAPACITOR >			
C231	1-126-204-11	ELECT CHIP	47uF	20%	16V
C232	1-128-065-11	ELECT CHIP	68uF	20%	10V
C233	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C234	1-163-119-00	CERAMIC CHIP	120PF	5%	50V
C235	1-126-204-11	ELECT CHIP	47uF	20%	16V
C236	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C237	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C238	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C239	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C240	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C241	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C242	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C243	1-162-963-11	CERAMIC CHIP	680PF	10%	50V
C244	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C245	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C246	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C247	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C248	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C249	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C250	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C251	1-164-836-11	CERAMIC CHIP	6.8uF		16V
C252	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C253	1-164-836-11	CERAMIC CHIP	6.8uF		16V

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DD-38

Ref. No.	Part No.	Description			Remark
C254	1-164-836-11	CERAMIC CHIP	6.8uF		16V
C255	1-164-836-11	CERAMIC CHIP	6.8uF		16V
C256	1-164-836-11	CERAMIC CHIP	6.8uF		16V
C257	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C258	1-164-836-11	CERAMIC CHIP	6.8uF		16V
C259	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C971	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C972	1-164-830-11	CERAMIC CHIP	1uF	22%	16V
C973	1-164-337-11	CERAMIC CHIP	2.2uF		16V
C974	1-164-830-11	CERAMIC CHIP	1uF	22%	16V
C975	1-127-558-11	ELECT(SOLID)	10uF	20%	10V
C976	1-127-558-11	ELECT(SOLID)	10uF	20%	10V
C977	1-164-337-11	CERAMIC CHIP	2.2uF		16V
C978	1-164-337-11	CERAMIC CHIP	2.2uF		16V
C979	1-164-830-11	CERAMIC CHIP	1uF	22%	16V
C980	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C981	1-164-830-11	CERAMIC CHIP	1uF	22%	16V
C982	1-164-337-11	CERAMIC CHIP	2.2uF		16V
C983	1-164-337-11	CERAMIC CHIP	2.2uF		16V
C984	1-164-836-11	CERAMIC CHIP	6.8uF		16V
C985	1-164-836-11	CERAMIC CHIP	6.8uF		16V
C986	1-164-830-11	CERAMIC CHIP	1uF	22%	16V
C987	1-164-337-11	CERAMIC CHIP	2.2uF		16V
C988	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C989	1-164-830-11	CERAMIC CHIP	1uF	22%	16V
C990	1-164-337-11	CERAMIC CHIP	2.2uF		16V
C991	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C992	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C993	1-128-065-11	ELECT CHIP	68uF	20%	10V
C996	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V

< CONNECTOR >

CN231	1-691-588-11	PIN, CONNECTOR (1.5MM)(SMD) 5P
CN232	1-691-534-11	CONNECTOR, BOARD TO BOARD 20P
CN233	1-691-538-11	CONNECTOR, BOARD TO BOARD 28P

< DIODE >

D231	8-719-989-33	DIODE FC806

< IC >

IC231	8-759-035-98	IC MC141600FU
IC232	8-759-035-98	IC MC141600FU

< COIL >

L231	1-424-519-21	COIL, MOLD CHOKE 1.0uH
L232	1-424-519-21	COIL, MOLD CHOKE 1.0uH
L234	1-424-519-21	COIL, MOLD CHOKE 1.0uH
L235	1-424-520-21	COIL, MOLD CHOKE 4.7uH
L236	1-424-520-21	COIL, MOLD CHOKE 4.7uH
L237	1-424-520-21	COIL, MOLD CHOKE 4.7uH
L238	1-424-524-21	COIL, CHOKE 47uH
L239	1-424-524-21	COIL, CHOKE 47uH
L240	1-424-524-21	COIL, CHOKE 47uH
L241	1-412-030-11	INDUCTOR CHIP 22uH
L242	1-412-027-11	INDUCTOR CHIP 2.2uH
L243	1-424-523-21	COIL, CHOKE 22uH
L244	1-424-523-21	COIL, CHOKE 22uH
L245	1-412-034-11	INDUCTOR CHIP 330uH
L246	1-412-034-11	INDUCTOR CHIP 330uH
L247	1-412-028-11	INDUCTOR CHIP 4.7uH
L248	1-412-030-11	INDUCTOR CHIP 22uH
L249	1-424-522-21	COIL, CHOKE 10uH
L250	1-412-027-11	INDUCTOR CHIP 2.2uH
L251	1-412-030-11	INDUCTOR CHIP 22uH

< TRANSISTOR >

Q231	8-729-823-93	TRANSISTOR	FC150
Q232	8-729-823-95	TRANSISTOR	FC149
Q233	8-729-823-84	TRANSISTOR	FP102
Q234	8-729-823-82	TRANSISTOR	FP101
Q235	8-729-823-82	TRANSISTOR	FP101
Q236	8-729-804-41	TRANSISTOR	2SB1122-S
Q237	8-729-823-84	TRANSISTOR	FP102
Q238	8-729-823-84	TRANSISTOR	FP102
Q239	8-729-823-93	TRANSISTOR	FC150
Q240	8-729-901-06	TRANSISTOR	DTA144EK

< RESISTOR >

R231	1-216-844-11	METAL CHIP	82K	5%	1/16W
R232	1-216-840-11	METAL CHIP	39K	5%	1/16W
R233	1-216-835-11	METAL CHIP	15K	5%	1/16W
R234	1-216-839-11	METAL CHIP	33K	5%	1/16W
R235	1-216-836-11	METAL CHIP	18K	5%	1/16W
R236	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R237	1-216-845-11	METAL CHIP	100K	5%	1/16W
R238	1-216-845-11	METAL CHIP	100K	5%	1/16W
R239	1-218-883-11	METAL CHIP	33K	0.50%	1/16W
R240	1-218-883-11	METAL CHIP	33K	0.50%	1/16W
R241	1-218-881-11	METAL CHIP	27K	0.50%	1/16W
R242	1-216-855-11	METAL CHIP	680K	5%	1/16W
R243	1-216-837-11	METAL CHIP	22K	5%	1/16W
R244	1-218-881-11	METAL CHIP	27K	0.50%	1/16W
R245	1-216-837-11	METAL CHIP	22K	5%	1/16W
R246	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R247	1-218-885-11	METAL CHIP	39K	0.50%	1/16W
R248	1-218-885-11	METAL CHIP	39K	0.50%	1/16W
R249	1-216-841-11	METAL CHIP	47K	5%	1/16W
R250	1-216-841-11	METAL CHIP	47K	5%	1/16W

Ref. No.	Part No.	Description	Remark
R251	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R252	1-216-850-11	METAL CHIP 270K 5% 1/16W	
R253	1-218-875-11	METAL CHIP 15K 0.50% 1/16W	
R254	1-218-895-11	METAL CHIP 100K 0.50% 1/16W	
R255	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R256	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R257	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R258	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R259	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R381	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R382	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R383	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R971	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R972	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R973	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R974	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R975	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R976	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R977	1-218-881-11	METAL CHIP 27K 0.50% 1/16W	
R978	1-216-820-11	METAL CHIP 820 5% 1/16W	
R979	1-218-885-11	METAL CHIP 39K 0.50% 1/16W	
R980	1-216-033-00	METAL CHIP 220 5% 1/10W	
R981	1-216-033-00	METAL CHIP 220 5% 1/10W	
R982	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R983	1-216-864-11	METAL CHIP 0 5% 1/16W	
R984	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R985	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R986	1-216-852-11	METAL CHIP 390K 5% 1/16W	
R987	1-216-850-11	METAL CHIP 270K 5% 1/16W	
R988	1-216-033-00	METAL CHIP 220 5% 1/10W	
R989	1-216-033-00	METAL CHIP 220 5% 1/10W	
R990	1-218-883-11	METAL CHIP 33K 0.50% 1/16W	
R991	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R992	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R993	1-216-033-00	METAL CHIP 220 5% 1/10W	
R994	1-216-033-00	METAL CHIP 220 5% 1/10W	
R995	1-216-009-00	METAL CHIP 22 5% 1/10W	
R996	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R997	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
		< VARIABLE RESISTOR >	
RV231	1-238-858-11	RES, ADJ, CERMET 47K	
RV232	1-238-857-11	RES, ADJ, CERMET 22K	
		< TRANSFORMER >	
T231	1-450-785-21	TRANSFORMER, CONVERTER	

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Ref. No.	Part No.	Description	Remark
	A-7062-792-A	FP-423 BLOCK ASSY ****************** (Ref No. 4,000 Series)	
	3-727-957-01	HOLDER (S), SENSOR	
	3-732-046-01	HOLDER, LED	
		< DIODE >	
D991	8-719-988-42	DIODE GL453S	
		< HOLE ELEMENT >	
H991	1-808-448-11	ELEMENT, HALL (CHIP TYPE)	
H992	1-808-448-11	ELEMENT, HALL (CHIP TYPE)	
		< TRANSISTOR >	
Q991	8-729-907-25	TRANSISTOR PT4850F	
Q992	8-729-907-25	TRANSISTOR PT4850F	
		< RESISTOR >	
R991	1-216-817-11	METAL CHIP 470 5% 1/16W	
R992	1-216-817-11	METAL CHIP 470 5% 1/16W	
R993	1-216-817-11	METAL CHIP 470 5% 1/16W	
R994	1-216-817-11	METAL CHIP 470 5% 1/16W	
		< SWITCH >	
S991	1-572-611-11	SWITCH, LEAF	
S992	1-572-802-12	SWITCH, PUSH (3 KEY)	

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Ref. No.	Part No.	Description	Remark
*	A-7071-552-A	HJ-13 BOARD, COMPLETE ********************* (Ref No. 6,000 Series)	
		< CAPACITOR >	
C501	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C502	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C503	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
		< CONNECTOR >	
CN501	1-691-550-11	PIN, CONNECTOR (1.5MM) (SMD) 3P	
		< DIODE >	
D501	8-719-420-14	DIODE MA8082-M	
D502	8-719-420-14	DIODE MA8082-M	
D503	8-719-420-14	DIODE MA8082-M	
D504	8-719-420-14	DIODE MA8082-M	
D505	8-719-404-46	DIODE MA110	

Ref. No.	Part No.	Description	Remark
		< JACK >	
J501	1-569-809-11	JACK (SMALL TYPE) (PHONES)	
		< COIL >	
L501	1-410-369-11	INDUCTOR CHIP 1uH	
L502	1-410-369-11	INDUCTOR CHIP 1uH	
L503	1-410-369-11	INDUCTOR CHIP 1uH	
**			
*	A-7071-550-A	LJ-6 BOARD, COMPLETE	
		********************	
		(Ref No.5,000 Series)	
		< CAPACITOR >	
C511	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C513	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
		< CONNECTOR >	
CN511	1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P	
		< DIODE >	
D511	8-719-106-71	DIODE RD12M-B2	
D512	8-719-420-14	DIODE MA8082-M	
D513	8-719-404-46	DIODE MA110	
		< JACK >	
J511	1-565-276-21	JACK, ULTRA SMALL 1P (REMOTE)	
		< COIL >	
L511	1-410-369-11	INDUCTOR CHIP 1uH	
L512	1-410-369-11	INDUCTOR CHIP 1uH	
L513	1-410-369-11	INDUCTOR CHIP 1uH	
**			
*	A-7063-030-A	MA-109 BOARD, COMPLETE	
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		(Ref No.7,000 Series)	
	3-947-195-01	PLATE, GROUND, MC	
		< CAPACITOR >	
C901	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C902	1-135-149-21	TANTALUM CHIP 2.2uF 20% 10V	
C903	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C904	1-135-149-21	TANTALUM CHIP 2.2uF 20% 10V	
C905	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C906	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C907	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C908	1-162-969-11	CERAMIC CHIP 0.0068uF 10% 25V	
C909	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C910	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C911	1-162-638-11	CERAMIC CHIP 1uF 16V	
C912	1-164-245-11	CERAMIC CHIP 0.015uF 10% 25V	
C913	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
C914	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C915	1-164-222-11	CERAMIC CHIP 0.22uF 25V	
C916	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C917	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C918	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C919	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
C920	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
C921	1-162-638-11	CERAMIC CHIP 1uF 16V	
C922	1-164-245-11	CERAMIC CHIP 0.015uF 10% 25V	
C923	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
C924	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C925	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C926	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C927	1-126-205-11	ELECT CHIP 47uF 20% 6.3V	
C928	1-164-346-11	CERAMIC CHIP 1uF 16V	
C929	1-164-346-11	CERAMIC CHIP 1uF 16V	
C930	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C931	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C932	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C933	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C934	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C935	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C936	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C937	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C938	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C939	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C940	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C941	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C942	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C943	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C944	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C945	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C946	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C947	1-164-245-11	CERAMIC CHIP 0.015uF 10% 25V	
C948	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C949	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C950	1-163-989-11	CERAMIC CHIP 0.033uF 10% 25V	
C951	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C952	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C953	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C954	1-164-173-11	CERAMIC CHIP 0.0039uF 10% 50V	
C956	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C957	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	

Ref. No.	Part No.	Description	Remark
C959	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C960	1-163-989-11	CERAMIC CHIP 0.033uF 10% 25V	
C961	1-163-989-11	CERAMIC CHIP 0.033uF 10% 25V	
C962	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C963	1-163-989-11	CERAMIC CHIP 0.033uF 10% 25V	
C964	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C965	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C966	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C967	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C969	1-163-833-00	CERAMIC CHIP 0.068uF 25V	
C970	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C971	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C972	1-164-670-11	CERAMIC CHIP 1200PF 5% 16V	
C973	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C974	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
C975	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
C976	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
C977	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C980	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C981	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C982	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN901	1-691-591-11	PIN, CONNECTOR (1.5MM) (SMD) 8P	
CN902	1-691-591-11	PIN, CONNECTOR (1.5MM) (SMD) 8P	
CN903	1-691-550-11	PIN, CONNECTOR (1.5MM)(SMD) 3P	

< DIODE >

Ref. No.	Part No.	Description	Remark
D901	8-719-404-46	DIODE MA110	
D902	8-719-404-46	DIODE MA110	
D903	8-719-404-46	DIODE MA110	

< IC >

Ref. No.	Part No.	Description	Remark
IC901	8-759-057-79	IC LA7470V	
IC902	8-759-710-79	IC NJM2107F	

< JACK >

Ref. No.	Part No.	Description	Remark
J901	1-569-810-11	JACK (SMALL TYPE) (MIC)	

< COIL >

Ref. No.	Part No.	Description	Remark
L901	1-410-993-11	INDUCTOR CHIP 1uH	
L902	1-410-993-11	INDUCTOR CHIP 1uH	
L903	1-410-993-11	INDUCTOR CHIP 1uH	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q901	8-729-015-63	TRANSISTOR XN4556-(TX)	
Q902	8-729-015-63	TRANSISTOR XN4556-(TX)	
Q903	8-729-010-80	TRANSISTOR FC13	
Q904	8-729-822-97	TRANSISTOR 2SC4211-5.6.7	
Q905	8-729-822-94	TRANSISTOR FC102	
Q906	8-729-822-97	TRANSISTOR 2SC4211-5.6.7	
Q907	8-729-822-48	TRANSISTOR FC101	
Q908	8-729-905-18	TRANSISTOR DTC144EU	
Q909	8-729-822-97	TRANSISTOR 2SC4211-5.6.7	
Q910	8-729-822-94	TRANSISTOR FC102	
Q911	8-729-015-63	TRANSISTOR XN4556-(TX)	
Q912	8-729-822-48	TRANSISTOR FC101	
Q913	8-729-905-23	TRANSISTOR 2SA1576-R	
Q914	8-729-822-94	TRANSISTOR FC102	
Q915	8-729-822-94	TRANSISTOR FC102	
Q917	8-729-905-12	TRANSISTOR DTA144EU	
Q918	8-729-822-48	TRANSISTOR FC101	
Q921	8-729-015-63	TRANSISTOR XN4556-(TX)	
Q922	8-729-822-48	TRANSISTOR FC101	
Q923	8-729-905-23	TRANSISTOR 2SA1576-R	
Q924	8-729-822-94	TRANSISTOR FC102	
Q925	8-729-822-94	TRANSISTOR FC102	
Q927	8-729-905-12	TRANSISTOR DTA144EU	
Q930	8-729-905-12	TRANSISTOR DTA144EU	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R892	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R893	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R894	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R895	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R896	1-216-864-11	METAL CHIP 0 5% 1/16W	
R897	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R898	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R899	1-216-864-11	METAL CHIP 0 5% 1/16W	
R901	1-216-817-11	METAL CHIP 470 5% 1/16W	
R902	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R903	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R904	1-216-856-11	METAL CHIP 820K 5% 1/16W	
R905	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R906	1-216-818-11	METAL CHIP 560 5% 1/16W	
R907	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R908	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R909	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R910	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R911	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R912	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R913	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R914	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R915	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R916	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R917	1-216-849-11	METAL CHIP 220K 5% 1/16W	

MA-109

Ref. No.	Part No.	Description	Remark
R918	1-216-846-11	METAL CHIP 120K 5% 1/16W	
R919	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R920	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R921	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R922	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R923	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R924	1-216-848-11	METAL CHIP 180K 5% 1/16W	
R925	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R926	1-216-818-11	METAL CHIP 560 5% 1/16W	
R927	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R928	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R929	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R930	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R931	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R933	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R934	1-216-847-11	METAL CHIP 150K 5% 1/16W	
R935	1-216-848-11	METAL CHIP 180K 5% 1/16W	
R936	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R937	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R938	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R939	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R940	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R941	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R942	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R943	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R944	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R945	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R946	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R947	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R948	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R949	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R950	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R951	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R952	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R953	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R954	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R955	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R956	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R957	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R958	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R959	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R960	1-216-855-11	METAL CHIP 680K 5% 1/16W	
R961	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R963	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R964	1-216-847-11	METAL CHIP 150K 5% 1/16W	
R965	1-216-848-11	METAL CHIP 180K 5% 1/16W	
R966	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R967	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R968	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R969	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R970	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R971	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R972	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R973	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R974	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R975	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R976	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R977	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R978	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R979	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R980	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R981	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R982	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R983	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R984	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R985	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R986	1-216-848-11	METAL CHIP 180K 5% 1/16W	
R987	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R988	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R989	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R990	1-216-855-11	METAL CHIP 680K 5% 1/16W	
R991	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R992	1-216-864-11	METAL CHIP 0 5% 1/16W	
R993	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R994	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R995	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R996	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R997	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R998	1-216-846-11	METAL CHIP 120K 5% 1/16W	
R999	1-216-864-11	METAL CHIP 0 5% 1/16W	

< VARIABLE RESISTOR >

Ref. No.	Part No.	Description	Remark
RV901	1-238-088-11	RES, ADJ, CERMET 2.2K	
RV901	1-238-854-11	RES, ADJ, CERMET 2.2K	

< SWITCH >

Ref. No.	Part No.	Description	Remark
S901	1-572-497-11	SWITCH, SLIDE (BUILT-IN MIC)	
S902	1-571-684-11	SWITCH, TACTIL (FADER)	

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Ref. No.	Part No.	Description	Remark
*	A-7071-551-A	RM-54 BOARD, COMPLETE	
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		(Ref No.4,000 Series)	
		< CAPACITOR >	
C401	1-135-217-21	TANTALUM CHIP 15uF 20% 6.3V	
		< IC >	
IC401	8-749-923-29	IC RS-20E-T	
		< RESISTOR >	
R401	1-216-017-00	METAL CHIP 47 5% 1/10W	
		< SWITCH >	
S401	1-692-043-11	SWITCH, PUSH (1 KEY) (REMOTE COMMANDER ON/OFF)	

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Ref. No.	Part No.	Description	Remark
*	A-7063-024-A	SE-22 BOARD, COMPLETE	
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		(Ref No.1,000 Series)	
		< CAPACITOR >	
C101	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C102	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C103	1-163-077-00	CERAMIC CHIP 0.1uF 10% 25V	
C104	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C105	1-163-077-00	CERAMIC CHIP 0.1uF 10% 25V	
C106	1-135-157-21	TANTALUM CHIP 10uF 20% 6.3V	
C107	1-162-969-11	CERAMIC CHIP 0.0068uF 10% 25V	
C108	1-162-969-11	CERAMIC CHIP 0.0068uF 10% 25V	
C109	1-126-470-11	ELECT 33uF 20% 6.3V	
C110	1-126-470-11	ELECT 33uF 20% 6.3V	
C111	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C112	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C113	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C114	1-135-318-11	TANTAL. CHIP 33uF 20% 4V	
C115	1-135-157-21	TANTALUM CHIP 10uF 20% 6.3V	
C116	1-135-161-21	TANTALUM CHIP 22uF 10% 10V	
C117	1-135-318-11	TANTAL. CHIP 33uF 20% 4V	
C119	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C121	1-135-161-21	TANTALUM CHIP 22uF 10% 10V	
		< CONNECTOR >	
CN101	1-691-516-11	CONNECTOR, BOARD TO BOARD 24P	
		< IC >	
IC101	8-759-998-98	IC LM358D	
IC102	8-759-981-75	IC RC3403AM	
IC103	8-759-234-77	IC TC4S66F	
IC104	8-759-234-77	IC TC4S66F	
		< RESISTOR >	
R101	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R102	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R103	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R104	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R105	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R106	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R107	1-218-768-11	METAL CHIP 470K 0.50% 1/10W	
R108	1-218-768-11	METAL CHIP 470K 0.50% 1/10W	
R109	1-216-013-00	METAL CHIP 33 5% 1/10W	
R110	1-216-013-00	METAL CHIP 33 5% 1/10W	
R111	1-216-013-00	METAL CHIP 33 5% 1/10W	
R112	1-216-013-00	METAL CHIP 33 5% 1/10W	
R113	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R115	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R116	1-216-850-11	METAL CHIP 270K 5% 1/16W	
R117	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R118	1-216-850-11	METAL CHIP 270K 5% 1/16W	
R119	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R120	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R122	1-218-768-11	METAL CHIP 470K 0.50% 1/10W	
R123	1-218-768-11	METAL CHIP 470K 0.50% 1/10W	
		< FLEXIBLE BOARD >	
W101	1-642-239-11	FP-486 FLEXIBLE BOARD	

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Ref. No.	Part No.	Description	Remark
*	A-7063-087-A	VC-103 BOARD, COMPLETE	
		***********************	
		(Ref No.2,000 Series)	
	1-691-552-11	CONNECTOR, BOARD TO BOARD 48P	
		< CAPACITOR >	
C701	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C703	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C704	1-163-077-00	CERAMIC CHIP 0.1uF 10% 25V	
C705	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C706	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C707	1-163-077-00	CERAMIC CHIP 0.1uF 10% 25V	
C708	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C712	1-162-638-11	CERAMIC CHIP 1uF 16V	
C713	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C714	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C715	1-162-974-11	CERAMIC CHIP 0.01uF 50V	

Ref.No.	Part No.	Description			Remark
C717	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C722	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C723	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C724	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C725	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C726	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C727	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C728	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C730	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C731	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C735	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C737	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C738	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C741	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C742	1-162-946-11	CERAMIC CHIP	27PF	5%	50V
C743	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C744	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C745	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C746	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C747	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C748	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C801	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C802	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C803	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C804	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C805	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C806	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C807	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C808	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C809	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C810	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C811	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C813	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C814	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C815	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C816	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C817	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C818	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C819	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C820	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C821	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C823	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C826	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C827	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C830	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C832	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C833	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C834	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C835	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C836	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C837	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C839	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C841	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C845	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C846	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C851	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C853	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C854	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C855	1-135-161-21	TANTALUM CHIP	22uF	10%	10V
C856	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C857	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C858	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C859	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C860	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C861	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C862	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C863	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C865	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C866	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C867	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C868	1-162-638-11	CERAMIC CHIP	1uF		16V
C869	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C870	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C872	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C873	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C874	1-165-112-11	CERAMIC CHIP	0.33uF		16V
C921	1-164-346-11	CERAMIC CHIP	1uF		16V
C922	1-164-346-11	CERAMIC CHIP	1uF		16V
C923	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C925	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C927	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C928	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C929	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C930	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C931	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C932	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C933	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C934	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C935	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
C936	1-164-237-11	CERAMIC CHIP	16PF	5%	50V
C937	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C938	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C940	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C941	1-162-961-11	CERAMIC CHIP	330PF	10%	50V
C942	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C945	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C947	1-162-638-11	CERAMIC CHIP	1uF		16V
C948	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V

Ref. No.	Part No.	Description	Remark
C949	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C950	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V
		< CONNECTOR >	
CN701	1-691-920-11	CONNECTOR, BOARD TO BOARD 18P	
CN801	1-573-523-21	CONNECTOR, BOARD TO BOARD 16P	
CN851	1-691-385-21	CONNECTOR, FFC/FPC 21P	
CN923	1-573-293-21	PIN, CONNECTOR (1.5MM)(SMD) 2P	
CN924	1-573-371-21	CONNECTOR, BOARD TO BOARD 14P	
CN925	1-580-056-21	PIN, CONNECTOR 3P	
		< TRIMMER >	
CT801	1-141-356-11	CAP, ADJ	
		< DIODE >	
D702	8-719-404-46	DIODE MA110	
D922	8-719-421-27	DIODE MA728	
D923	8-719-404-46	DIODE MA110	
D924	8-719-404-46	DIODE MA110	
D925	8-719-404-46	DIODE MA110	
D927	8-719-404-46	DIODE MA110	
		< FILTER >	
FL701	1-236-759-21	FILTER, LOW PASS (TRAP)	
FL702	1-415-731-21	DELAY LINE, LC (YH)	
FL921	1-406-452-11	COIL, OSC	
		< IC >	
IC701	8-759-044-78	IC AK6420F	
IC702	8-752-835-99	IC CXP80624-277Q	
IC703	8-752-337-36	IC CXD2104N	
IC705	8-759-064-36	IC MB88346BPFV	
IC706	8-759-069-18	IC CXD2103AR	
IC707	8-759-519-14	IC MB8464-15LLPFTN	
IC708	8-752-347-93	IC CXD2100AQ	
IC709	8-759-518-81	IC CXD2112R	
IC710	8-752-348-92	IC CXD2101AR	
IC711	8-759-243-19	IC TC7SU04F	
IC801	8-752-341-09	IC CXD1256R	
IC802	8-752-060-92	IC CXA1507BR	
IC803	8-752-053-26	IC CXA1399Q	
IC804	8-752-327-48	IC CXD1250N	
IC805	8-752-054-61	IC CXA1390AR	
IC851	8-759-513-26	IC XRU5846FS	
IC852	8-759-077-35	IC NJM3414M	
IC853	8-759-998-96	IC LM324D	
IC854	8-759-059-07	IC LC78865M	
IC855	8-759-038-81	IC MPC1724M	

Ref. No.	Part No.	Description	Remark
IC856	8-759-823-51	IC LB1830M	
IC921	8-759-937-54	IC S-81250HG-RD-S	
IC922	8-759-511-22	IC CXA1448N	
IC923	8-759-044-78	IC AK6420F	
IC924	8-759-066-76	IC uPD75316GF-SGX3120U	
IC925	8-759-999-02	IC TL1596CDB	
IC926	8-759-145-63	IC uPD7564G-540	
IC927	8-759-069-29	IC uPD6456GS-618	
		< COIL >	
L701	1-412-006-31	INDUCTOR CHIP 10uH	
L702	1-412-058-11	INDUCTOR CHIP 10uH	
L703	1-412-006-31	INDUCTOR CHIP 10uH	
L704	1-412-006-31	INDUCTOR CHIP 10uH	
L705	1-412-058-11	INDUCTOR CHIP 10uH	
L706	1-412-062-11	INDUCTOR CHIP 47uH	
L707	1-412-006-31	INDUCTOR CHIP 10uH	
L708	1-412-006-31	INDUCTOR CHIP 10uH	
L711	1-410-391-11	INDUCTOR CHIP 68uH	
L712	1-412-006-31	INDUCTOR CHIP 10uH	
L714	1-412-052-21	INDUCTOR CHIP 1uH	
L715	1-412-979-21	INDUCTOR 1uH	
L716	1-412-979-21	INDUCTOR 1uH	
L717	1-412-052-21	INDUCTOR CHIP 1uH	
L718	1-412-052-21	INDUCTOR CHIP 1uH	
L719	1-412-006-31	INDUCTOR CHIP 10uH	
L720	1-412-006-31	INDUCTOR CHIP 10uH	
L721	1-410-993-11	INDUCTOR CHIP 1uH	
L801	1-412-058-11	INDUCTOR CHIP 10uH	
L802	1-412-006-31	INDUCTOR CHIP 10uH	
L803	1-412-058-11	INDUCTOR CHIP 10uH	
L804	1-412-058-11	INDUCTOR CHIP 10uH	
L852	1-412-032-11	INDUCTOR CHIP 100uH	
L853	1-412-058-11	INDUCTOR CHIP 10uH	
L854	1-412-062-11	INDUCTOR CHIP 47uH	
L921	1-410-389-31	INDUCTOR CHIP 47uH	
L922	1-412-052-21	INDUCTOR CHIP 1uH	
L923	1-412-052-21	INDUCTOR CHIP 1uH	
L924	1-412-058-11	INDUCTOR CHIP 10uH	
L926	1-412-006-31	INDUCTOR CHIP 10uH	
		< IC LINK >	
⚠PS921	1-576-122-21	RINK, IC	
		< TRANSISTOR >	
Q701	8-729-905-61	TRANSISTOR DTC124EU	
Q703	8-729-905-18	TRANSISTOR DTC144EU	
Q706	8-729-905-23	TRANSISTOR 2SA1576-R	
Q707	8-729-905-23	TRANSISTOR 2SA1576-R	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description				Remark
Q708	8-729-120-28	TRANSISTOR	2SC1623-L5L6			
Q709	8-729-120-28	TRANSISTOR	2SC1623-L5L6			
Q710	8-729-402-84	TRANSISTOR	XN4601			
Q801	8-729-120-28	TRANSISTOR	2SC1623-L5L6			
Q802	8-729-403-27	TRANSISTOR	XN4401			
Q853	8-729-120-28	TRANSISTOR	2SC1623-L5L6			
Q854	8-729-907-00	TRANSISTOR	DTC114EU			
Q855	8-729-403-27	TRANSISTOR	XN4401			
Q921	8-729-905-XX	TRANSISTOR	DTC114TUT106			
Q922	8-729-905-XX	TRANSISTOR	DTC114TUT106			
Q923	8-729-907-00	TRANSISTOR	DTC114EU			
Q925	8-729-905-12	TRANSISTOR	DTA144EU			
Q926	8-729-905-XX	TRANSISTOR	DTC114TUT106			

< RESISTOR >

Ref. No.	Part No.	Description				Remark
R701	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R702	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R703	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R704	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R705	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R706	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R707	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R708	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R709	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R710	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R711	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R719	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R720	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R721	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R726	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R730	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R731	1-216-864-11	METAL CHIP	0	5%	1/16W	
R733	1-216-864-11	METAL CHIP	0	5%	1/16W	
R734	1-216-814-11	METAL CHIP	270	5%	1/16W	
R735	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R736	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R737	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R741	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R742	1-216-864-11	METAL CHIP	0	5%	1/16W	
R743	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R746	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R747	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R748	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R749	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R750	1-216-815-11	METAL CHIP	330	5%	1/16W	
R751	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R752	1-216-864-11	METAL CHIP	0	5%	1/16W	
R755	1-216-816-11	METAL CHIP	390	5%	1/16W	
R756	1-216-816-11	METAL CHIP	390	5%	1/16W	

Ref. No.	Part No.	Description				Remark
R763	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R764	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R766	1-216-820-11	METAL CHIP	820	5%	1/16W	
R767	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R768	1-216-864-11	METAL CHIP	0	5%	1/16W	
R769	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R770	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R771	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R772	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R773	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R774	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R775	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R776	1-216-814-11	METAL CHIP	270	5%	1/16W	
R777	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R778	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R779	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R780	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R782	1-216-864-11	METAL CHIP	0	5%	1/16W	
R785	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R786	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R787	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R788	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R789	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R790	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R802	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R803	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R804	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R805	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R808	1-216-801-11	METAL CHIP	22	5%	1/16W	
R809	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R810	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R812	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R813	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R814	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R819	1-216-805-11	METAL CHIP	47	5%	1/16W	
R821	1-216-863-11	METAL GLAZE	3.3M	5%	1/16W	
R823	1-218-721-11	METAL CHIP	16K	0.50%	1/16W	
R823	1-218-876-11	METAL CHIP	16K	0.50%	1/16W	
R825	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R830	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R830	1-218-847-11	METAL CHIP	1K	0.50%	1/16W	
R831	1-216-818-11	METAL CHIP	560	5%	1/16W	
R832	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R833	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R834	1-216-864-11	METAL CHIP	0	5%	1/16W	
R835	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R853	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R854	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R855	1-216-839-11	METAL CHIP	33K	5%	1/16W	

Ref. No.	Part No.	Description				Remark
R856	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R857	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R858	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R859	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R860	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R861	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R862	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R863	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R864	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R865	1-216-820-11	METAL CHIP	820	5%	1/16W	
R867	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R868	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R869	1-216-848-11	METAL CHIP	180K	5%	1/16W	
R870	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R871	1-216-855-11	METAL CHIP	680K	5%	1/16W	
R872	1-216-848-11	METAL CHIP	180K	5%	1/16W	
R873	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R874	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R875	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R876	1-216-816-11	METAL CHIP	390	5%	1/16W	
R877	1-216-134-00	METAL CHIP	2.2	5%	1/8W	
R878	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R879	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R880	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R921	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R924	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R925	1-216-813-11	METAL CHIP	220	5%	1/16W	
R926	1-216-813-11	METAL CHIP	220	5%	1/16W	
R927	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R928	1-216-864-11	METAL CHIP	0	5%	1/16W	
R929	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R930	1-216-813-11	METAL CHIP	220	5%	1/16W	
R931	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R932	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R933	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R934	1-216-813-11	METAL CHIP	220	5%	1/16W	
R935	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R936	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R938	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R939	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R941	1-216-861-11	METAL CHIP	2.2M	5%	1/16W	
R942	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R943	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R944	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R945	1-218-857-11	METAL CHIP	2.7K	0.50%	1/16W	
R946	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R947	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R948	1-216-821-11	METAL CHIP	1K	5%	1/16W	

Ref. No.	Part No.	Description				Remark
R949	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R950	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R951	1-216-809-11	METAL CHIP	100	5%	1/16W	
R952	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R954	1-216-814-11	METAL CHIP	270	5%	1/16W	
R955	1-216-817-11	METAL CHIP	470	5%	1/16W	
R957	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R958	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R959	1-216-296-00	METAL CHIP	0	5%	1/8W	
R960	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R961	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R962	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R963	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R964	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R965	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R966	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R967	1-216-809-11	METAL CHIP	100	5%	1/16W	
R968	1-216-809-11	METAL CHIP	100	5%	1/16W	
R969	1-216-809-11	METAL CHIP	100	5%	1/16W	

< NETWORK RESISTOR >

RB701	1-236-432-11	NETWORK, RES 47K
RB921	1-236-904-11	RESISTOR, NETWORK (CHIP TYPE)
RB922	1-236-904-11	RESISTOR, NETWORK (CHIP TYPE)
RB923	1-236-432-11	NETWORK, RES 47K
RB924	1-236-412-11	NETWORK, RES 1.0K
RB925	1-236-904-11	RESISTOR, NETWORK (CHIP TYPE)
RB926	1-236-904-11	RESISTOR, NETWORK (CHIP TYPE)
RB927	1-236-908-11	RESISTOR, NETWORK (CHIP TYPE)
RB928	1-236-908-11	RESISTOR, NETWORK (CHIP TYPE)
RB929	1-236-904-11	RESISTOR, NETWORK (CHIP TYPE)
RB930	1-236-907-11	RESISTOR, NETWORK (CHIP TYPE)
RB931	1-236-907-11	RESISTOR, NETWORK (CHIP TYPE)
RB932	1-236-405-11	NETWORK, RES 270
RB935	1-236-416-11	NETWORK, RES 2.2K
RB937	1-236-432-11	NETWORK, RES 47K

< FLEXIBLE BOARD >

W701	1-642-240-11	FP-518 FLEXIBLE BOARD
W926	1-642-235-11	FP-481 FLEXIBLE BOARD

< VIBRATOR >

X701	1-579-553-11	VIBRATOR (10MHz)
X801	1-579-042-11	VIBRATOR, CRYSTAL (28.6363MHz)
X921	1-579-063-21	VIBRATOR, CERAMIC (4.19MHz)
X922	1-579-550-11	VIBRATOR, CRYSTAL (32KHz)
X923	1-579-551-11	VIBRATOR, CERAMIC (700KHz)

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VD-21

Ref. No.	Part No.	Description	Remark
*	A-7063-025-A	VD-21 BOARD, COMPLETE ********************** (Ref No. 1,000 Series)	

< CAPACITOR >

Ref. No.	Part No.	Description	Remark
C001	1-135-211-11	TANTAL. CHIP 6.8uF 20% 6.3V	
C002	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C003	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C004	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C005	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C006	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C007	1-162-967-11	CERAMIC CHIP 0.0033uF 10% 50V	
C008	1-162-967-11	CERAMIC CHIP 0.0033uF 10% 50V	
C009	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C010	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C011	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C012	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C013	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C014	1-135-201-11	TANTALUM CHIP 10uF 20% 4V	
C017	1-135-149-21	TANTALUM CHIP 2.2uF 20% 10V	
C018	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C019	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C020	1-135-091-00	TANTALUM CHIP 1uF 20% 16V	
C021	1-164-222-11	CERAMIC CHIP 0.22uF 25V	
C022	1-135-210-11	TANTALUM CHIP 4.7uF 20% 10V	
C023	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C024	1-135-210-11	TANTALUM CHIP 4.7uF 20% 10V	
C025	1-135-211-11	TANTAL. CHIP 6.8uF 20% 6.3V	
C027	1-135-211-11	TANTAL. CHIP 6.8uF 20% 6.3V	
C028	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C029	1-164-343-11	CERAMIC CHIP 0.056uF 10% 25V	
C030	1-164-343-11	CERAMIC CHIP 0.056uF 10% 25V	
C033	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C034	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C035	1-162-974-11	CERAMIC CHIP 0.01uF 50V	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN001	1-691-536-11	CONNECTOR, BOARD TO BOARD 24P	
CN002	1-691-513-11	CONNECTOR, BOARD TO BOARD 12P	
CN003	1-580-057-11	PIN, CONNECTOR 4P	

< IC >

Ref. No.	Part No.	Description	Remark
IC001	8-759-077-35	IC NJM3414M	
IC002	8-759-998-96	IC LM324D	
IC003	8-759-981-75	IC RC3403AM	
IC004	8-759-077-35	IC NJM3414M	
IC005	8-759-058-98	IC SC370605DR	
IC006	8-752-834-58	IC CXP80624-268Q	
IC007	8-759-500-11	IC MM1036XF	

< COIL >

Ref. No.	Part No.	Description	Remark
L001	1-412-006-31	INDUCTOR CHIP 10uH	
L002	1-412-006-31	INDUCTOR CHIP 10uH	
L003	1-412-058-11	INDUCTOR CHIP 10uH	
L004	1-412-006-31	INDUCTOR CHIP 10uH	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q001	8-729-920-XX	TRANSISTOR DTA114EU	
Q002	8-729-402-78	TRANSISTOR XN6401	
Q003	8-729-402-42	TRANSISTOR UN5213	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R001	1-216-031-00	METAL CHIP 180 5% 1/10W	
R002	1-218-716-11	METAL CHIP 10K 0.50% 1/16W	
R003	1-218-716-11	METAL CHIP 10K 0.50% 1/16W	
R004	1-218-740-11	METAL CHIP 100K 0.50% 1/16W	
R005	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R006	1-218-708-11	METAL CHIP 4.7K 0.50% 1/16W	
R007	1-218-736-11	METAL CHIP 68K 0.50% 1/16W	
R008	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R009	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R010	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R011	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R012	1-218-736-11	METAL CHIP 68K 0.50% 1/16W	
R013	1-218-716-11	METAL CHIP 10K 0.50% 1/16W	
R014	1-218-716-11	METAL CHIP 10K 0.50% 1/16W	
R015	1-218-740-11	METAL CHIP 100K 0.50% 1/16W	
R016	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R017	1-218-740-11	METAL CHIP 100K 0.50% 1/16W	
R018	1-218-740-11	METAL CHIP 100K 0.50% 1/16W	
R019	1-218-708-11	METAL CHIP 4.7K 0.50% 1/16W	
R020	1-218-740-11	METAL CHIP 100K 0.50% 1/16W	
R021	1-218-748-11	METAL CHIP 220K 0.50% 1/16W	
R022	1-218-748-11	METAL CHIP 220K 0.50% 1/16W	
R023	1-218-740-11	METAL CHIP 100K 0.50% 1/16W	
R024	1-218-732-11	METAL CHIP 47K 0.50% 1/16W	
R024	1-218-887-11	METAL CHIP 47K 0.50% 1/16W	
R025	1-218-732-11	METAL CHIP 47K 0.50% 1/16W	
R025	1-218-887-11	METAL CHIP 47K 0.50% 1/16W	
R029	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R030	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R031	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R032	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R033	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R034	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R035	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R036	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R037	1-216-821-11	METAL CHIP 1K 5% 1/16W	

Ref. No.	Part No.	Description			Remark
R038	1-216-821-11	METAL CHIP	1K	5%	1/16W
R039	1-216-821-11	METAL CHIP	1K	5%	1/16W
R040	1-216-833-11	METAL CHIP	10K	5%	1/16W
R041	1-216-833-11	METAL CHIP	10K	5%	1/16W
R042	1-216-833-11	METAL CHIP	10K	5%	1/16W
R044	1-216-833-11	METAL CHIP	10K	5%	1/16W
R045	1-216-840-11	METAL CHIP	39K	5%	1/16W
R047	1-216-814-11	METAL CHIP	270	5%	1/16W
R052	1-216-857-11	METAL CHIP	1M	5%	1/16W
R053	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R054	1-216-833-11	METAL CHIP	10K	5%	1/16W
R055	1-216-789-11	METAL CHIP	2.2	5%	1/16W
R056	1-216-821-11	METAL CHIP	1K	5%	1/16W
R057	1-218-688-11	METAL CHIP	680	0.50%	1/16W
R057	1-218-843-11	METAL CHIP	680	0.50%	1/16W
R058	1-218-688-11	METAL CHIP	680	0.50%	1/16W
R058	1-218-843-11	METAL CHIP	680	0.50%	1/16W

< VIBRATOR >

X001 1-579-553-11 VIBRATOR

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* A-7063-257-A VS-84 BOARD, COMPLETE

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(Ref No.3,000 Series)

1-630-591-11 FP-182 FLEXIBLE BOARD

* 3-946-452-01 CASE (UPPER), SHIELD, RP

* 3-946-453-01 CASE (LOWER), SHIELD, RP

< CAPACITOR >

Ref. No.	Part No.	Description			Remark
C001	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C002	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C003	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C004	1-162-926-11	CERAMIC CHIP	82PF	5%	50V
C005	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C006	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C008	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C009	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C011	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C012	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C013	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C014	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C015	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C016	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C017	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C018	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C019	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C020	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C021	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C022	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C023	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C024	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C025	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C026	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C027	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C028	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C029	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C030	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C031	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C032	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C034	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C035	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C036	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C037	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C038	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C039	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C040	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C041	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C043	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C044	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C046	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C047	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C048	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C049	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C050	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C051	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C052	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C053	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C054	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C055	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C056	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C057	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C058	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C059	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C060	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C061	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C062	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C071	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C072	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C073	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C074	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C075	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C076	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C077	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C079	1-162-976-11	CERAMIC CHIP	75PF	5%	50V
C080	1-162-922-11	CERAMIC CHIP	39PF	5%	50V
C081	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C083	1-162-928-11	CERAMIC CHIP	120PF	5%	50V

Ref. No.	Part No.	Description			Remark
C084	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C085	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C086	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C087	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C088	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C089	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C090	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C091	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C092	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C094	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C095	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C096	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C097	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C098	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C099	1-162-925-11	CERAMIC CHIP	68PF	5%	50V
C100	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C102	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C103	1-162-925-11	CERAMIC CHIP	68PF	5%	50V
C104	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C105	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C106	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C107	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C108	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C109	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C110	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C111	1-164-466-11	CERAMIC CHIP	240PF	5%	50V
C112	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C113	1-164-816-11	CERAMIC CHIP	220PF	2%	50V
C114	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C115	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C116	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C117	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C119	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C120	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C121	1-162-912-11	CERAMIC CHIP	7PF	0.5PF	50V
C122	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C123	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C124	1-162-950-11	CERAMIC CHIP	56PF	5%	50V
C125	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C126	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C127	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C128	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C129	1-162-941-11	CERAMIC CHIP	10PF	0.5PF	50V
C130	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
C131	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C132	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C133	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C134	1-162-910-11	CERAMIC CHIP	5PF	0.25PF	50V

Ref. No.	Part No.	Description			Remark
C135	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C136	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C151	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C152	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C153	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C154	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C155	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C156	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C157	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C158	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C159	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C160	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C161	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C162	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C163	1-163-833-00	CERAMIC CHIP	0.068uF		25V
C164	1-163-833-00	CERAMIC CHIP	0.068uF		25V
C165	1-164-346-11	CERAMIC CHIP	1uF		16V
C166	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C167	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C168	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C169	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C170	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C171	1-162-911-11	CERAMIC CHIP	6PF	0.5PF	50V
C172	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C173	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C174	1-162-916-11	CERAMIC CHIP	12PF	5%	50V
C175	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C176	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C177	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C178	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C179	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C180	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C181	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C182	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C183	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C184	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C187	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C188	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C189	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C191	1-164-346-11	CERAMIC CHIP	1uF		16V
C192	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C193	1-164-346-11	CERAMIC CHIP	1uF		16V
C194	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C195	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C196	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C197	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C198	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C199	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C200	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V

Ref. No.	Part No.	Description			Remark
C201	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C202	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C203	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C204	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C205	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C206	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C207	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C208	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C209	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C210	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C211	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C212	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C213	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C214	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C215	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C216	1-164-173-11	CERAMIC CHIP	0.0039uF	10%	50V
C219	1-164-346-11	CERAMIC CHIP	1uF		16V
C220	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C221	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C222	1-164-346-11	CERAMIC CHIP	1uF		16V
C223	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C224	1-164-346-11	CERAMIC CHIP	1uF		16V
C225	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C226	1-162-910-11	CERAMIC CHIP	5PF	0.25PF	50V
C227	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C261	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C262	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C263	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C264	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C265	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C266	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C267	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C268	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C269	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C270	1-162-926-11	CERAMIC CHIP	82PF	5%	50V
C271	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C272	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C273	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C274	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C275	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C276	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C277	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C278	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C279	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C280	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C281	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C282	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C283	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C301	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V

Ref. No.	Part No.	Description			Remark
C302	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C303	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C304	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C305	1-164-346-11	CERAMIC CHIP	1uF		16V
C306	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C307	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C308	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C309	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C310	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C311	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C312	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C313	1-126-246-11	ELECT CHIP	220uF	20%	4V
C314	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C315	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C316	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C317	1-162-944-11	CERAMIC CHIP	18PF	5%	50V
C319	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C320	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C321	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C322	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C323	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C324	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C325	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C326	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C327	1-164-346-11	CERAMIC CHIP	1uF		16V
C401	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C402	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C403	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C404	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C405	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C406	1-164-346-11	CERAMIC CHIP	1uF		16V
C407	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C408	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C409	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C410	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C411	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C412	1-126-246-11	ELECT CHIP	220uF	20%	4V
C413	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C415	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C416	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C417	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C418	1-164-471-11	CERAMIC CHIP	680PF	5%	50V
C419	1-135-162-21	TANTALUM CHIP	33uF	20%	6.3V
C420	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C421	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C422	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C423	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C424	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C425	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V

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Ref.No.	Part No.	Description			Remark
C426	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C427	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C428	1-162-952-11	CERAMIC CHIP	82PF	5%	50V
C429	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C430	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C431	1-162-942-11	CERAMIC CHIP	12PF	5%	50V
C432	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C433	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C434	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C435	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C436	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C437	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C438	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C439	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C440	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C441	1-162-941-11	CERAMIC CHIP	10PF	0.5PF	50V
C442	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C444	1-162-950-11	CERAMIC CHIP	56PF	5%	50V
C446	1-162-943-11	CERAMIC CHIP	15PF	5%	50V
C447	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C450	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C451	1-163-263-11	CERAMIC CHIP	330PF	5%	50V
C452	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C453	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C454	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C455	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C456	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C457	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C458	1-162-956-11	CERAMIC CHIP	180PF	5%	50V
C459	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C460	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C461	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C462	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C464	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C465	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C466	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C467	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C468	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C469	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C470	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C471	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C472	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C473	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C474	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C499	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C501	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C502	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C504	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C505	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C506	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C507	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C508	1-162-952-11	CERAMIC CHIP	82PF	5%	50V
C509	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C510	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C511	1-162-954-11	CERAMIC CHIP	120PF	5%	50V
C512	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C514	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C515	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C517	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C518	1-135-166-21	TANTALUM CHIP	47uF	10%	10V
C519	1-162-926-11	CERAMIC CHIP	82PF	5%	50V
C520	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C521	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C522	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C523	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C524	1-135-146-21	TANTALUM CHIP	0.68uF	20%	25V
C525	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C526	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C527	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C528	1-162-945-11	CERAMIC CHIP	22PF	5%	50V
C529	1-162-950-11	CERAMIC CHIP	56PF	5%	50V
C530	1-162-912-11	CERAMIC CHIP	7PF	0.5PF	50V
C531	1-162-910-11	CERAMIC CHIP	5PF	0.25PF	50V
C532	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C533	1-162-945-11	CERAMIC CHIP	22PF	5%	50V
C534	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C535	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C538	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C552	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C553	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C554	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C555	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C556	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C557	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C558	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C559	1-164-346-11	CERAMIC CHIP	1uF		16V
C560	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C561	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C562	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C563	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C564	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C566	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C567	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C568	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C569	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C570	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C571	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V

Ref. No.	Part No.	Description	Remark
C572	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C573	1-164-346-11	CERAMIC CHIP 1uF	16V
C574	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C575	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V
C576	1-162-947-11	CERAMIC CHIP 33PF 5%	50V
C577	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V
C578	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C579	1-164-360-11	CERAMIC CHIP 0.1uF	16V

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN001	1-566-531-11	CONNECTOR, FPC (ZIF) 15P	
CN151	1-573-293-21	PIN, CONNECTOR (1.5MM) (SMD) 2P	
CN152	1-569-363-21	CONNECTOR, FPC 15P	
CN153	1-566-538-11	CONNECTOR, FPC (NON ZIF) 6P	
CN154	1-566-541-11	CONNECTOR, FPC (NON ZIF) 9P	
CN301	1-565-878-11	PIN, CONNECTOR (PC BOARD) 6P	
CN502	1-565-662-11	CONNECTOR (PC BOARD) 15P	

< DIODE >

Ref. No.	Part No.	Description	Remark
D071	8-719-404-46	DIODE MA110	
D072	8-719-800-76	DIODE 1SS226	
D073	8-719-404-46	DIODE MA110	
D301	8-719-404-35	DIODE MA141WK	
D302	8-719-404-35	DIODE MA141WK	
D303	8-719-420-14	DIODE MA8082-M	
D304	8-719-404-46	DIODE MA110	
D305	8-719-404-46	DIODE MA110	
D306	8-719-420-14	DIODE MA8082-M	
D307	8-719-420-14	DIODE MA8082-M	
D308	8-719-420-14	DIODE MA8082-M	
D309	8-719-420-14	DIODE MA8082-M	
D402	8-719-404-35	DIODE MA141WK	
D403	8-719-820-05	DIODE 1SS181	
D404	8-719-820-05	DIODE 1SS181	
D405	8-719-404-46	DIODE MA110	
D407	8-719-404-46	DIODE MA110	
D408	8-719-404-46	DIODE MA110	
D409	8-719-404-46	DIODE MA110	
D551	8-719-404-46	DIODE MA110	
D552	8-719-404-35	DIODE MA141WK	
D553	8-719-404-46	DIODE MA110	

< FILTER >

Ref. No.	Part No.	Description	Remark
FL071	1-409-475-21	FILTER, TRAP	
FL401	1-239-112-21	FILTER, LOW PASS (Y)	
FL402	1-236-775-11	FILTER, LOW PASS (DEM)	
FL501	1-239-109-21	FILTER, BAND PASS	
FL502	1-236-146-11	FILTER, BAND PASS	
FL503	1-579-370-11	FILTER, CERAMIC	
FL551	1-236-757-21	FILTER, LOW PASS (C)	
FL552	1-236-773-21	FILTER, LOW PASS (Y)	

< IC >

Ref. No.	Part No.	Description	Remark
IC001	8-759-057-58	IC CXA1555R	
IC071	8-752-058-02	IC CXA1509AR	
IC072	8-759-009-10	IC MC14069UBG	
IC151	8-759-057-81	IC MPC1727VM	
IC152	8-759-823-90	IC LB8110M	
IC153	8-752-836-11	IC CXP80624-266Q	
IC154	8-759-057-77	IC MCD004BN	
IC155	8-759-243-19	IC TC7SU04F	
IC156	8-759-057-74	IC MCD002AR	
IC157	8-759-512-42	IC CXA1481R	
IC261	8-752-010-20	IC CX20102	
IC262	8-759-067-54	IC CXD2120Q	
IC301	8-759-038-83	IC MC13400FU	
IC303	8-759-061-70	IC MB86168PFV	
IC304	8-759-064-36	IC MB88346BPFV	
IC305	8-759-064-36	IC MB88346BPFV	
IC306	8-759-064-36	IC MB88346BPFV	
IC401	8-752-036-19	IC CXA1207R	
IC402	8-759-636-33	IC CXA1452	
IC403	8-752-053-21	IC CXA1211M	
IC501	8-752-036-20	IC CXA1208R	
IC503	8-752-053-21	IC CXA1211M	
IC551	8-752-332-68	IC CXL5502M	
IC552	8-752-332-68	IC CXL5502M	

< COIL >

Ref. No.	Part No.	Description	Remark
L001	1-412-033-11	INDUCTOR CHIP 220uH	
L002	1-410-381-11	INDUCTOR CHIP 10uH	
L003	1-412-032-11	INDUCTOR CHIP 100uH	
L004	1-410-385-11	INDUCTOR CHIP 22uH	
L005	1-412-032-11	INDUCTOR CHIP 100uH	
L006	1-412-032-11	INDUCTOR CHIP 100uH	
L007	1-412-032-11	INDUCTOR CHIP 100uH	
L008	1-410-385-11	INDUCTOR CHIP 22uH	
L071	1-410-381-11	INDUCTOR CHIP 10uH	
L072	1-410-657-21	INDUCTOR CHIP 180uH	
L073	1-410-384-31	INDUCTOR CHIP 18uH	
L074	1-410-379-31	INDUCTOR CHIP 6.8uH	
L075	1-410-380-31	INDUCTOR CHIP 8.2uH	
L076	1-410-384-31	INDUCTOR CHIP 18uH	
L077	1-410-375-11	INDUCTOR CHIP 3.3uH	
L078	1-408-797-11	INDUCTOR CHIP 470uH	
L079	1-410-387-11	INDUCTOR CHIP 33uH	
L080	1-410-656-11	INDUCTOR CHIP 150uH	

Ref. No.	Part No.	Description	Remark
L081	1-410-389-31	INDUCTOR CHIP 47uH	
L082	1-410-657-21	INDUCTOR CHIP 180uH	
L084	1-410-383-31	INDUCTOR CHIP 15uH	
L085	1-410-384-31	INDUCTOR CHIP 18uH	
L086	1-410-381-11	INDUCTOR CHIP 10uH	
L087	1-410-381-11	INDUCTOR CHIP 10uH	
L088	1-410-381-11	INDUCTOR CHIP 10uH	
L089	1-410-381-11	INDUCTOR CHIP 10uH	
L090	1-410-387-11	INDUCTOR CHIP 33uH	
L151	1-412-062-11	INDUCTOR CHIP 47uH	
L153	1-412-280-31	INDUCTOR 330uH	
L154	1-412-058-11	INDUCTOR CHIP 10uH	
L155	1-412-064-11	INDUCTOR CHIP 100uH	
L261	1-410-658-31	INDUCTOR CHIP 220uH	
L262	1-410-381-11	INDUCTOR CHIP 10uH	
L263	1-410-381-11	INDUCTOR CHIP 10uH	
L264	1-410-381-11	INDUCTOR CHIP 10uH	
L301	1-412-029-11	INDUCTOR CHIP 10uH	
L302	1-412-029-11	INDUCTOR CHIP 10uH	
L303	1-412-031-11	INDUCTOR CHIP 47uH	
L304	1-410-369-11	INDUCTOR CHIP 1uH	
L305	1-410-393-11	INDUCTOR CHIP 100uH	
L306	1-412-029-11	INDUCTOR CHIP 10uH	
L307	1-410-658-31	INDUCTOR CHIP 220uH	
L402	1-412-029-11	INDUCTOR CHIP 10uH	
L404	1-410-383-31	INDUCTOR CHIP 15uH	
L405	1-410-390-11	INDUCTOR CHIP 56uH	
L407	1-410-384-31	INDUCTOR CHIP 18uH	
L410	1-410-382-31	INDUCTOR CHIP 12uH	
L411	1-410-378-11	INDUCTOR CHIP 5.6uH	
L412	1-410-386-11	INDUCTOR CHIP 27uH	
L501	1-412-029-11	INDUCTOR CHIP 10uH	
L502	1-410-393-11	INDUCTOR CHIP 100uH	
L503	1-410-656-11	INDUCTOR CHIP 150uH	
L504	1-410-656-11	INDUCTOR CHIP 150uH	
L505	1-410-391-11	INDUCTOR CHIP 68uH	
L506	1-410-385-11	INDUCTOR CHIP 22uH	
L507	1-410-385-11	INDUCTOR CHIP 22uH	
L508	1-410-393-11	INDUCTOR CHIP 100uH	
L551	1-412-029-11	INDUCTOR CHIP 10uH	
L552	1-412-031-11	INDUCTOR CHIP 47uH	
L553	1-412-029-11	INDUCTOR CHIP 10uH	
L554	1-412-031-11	INDUCTOR CHIP 47uH	
		< IC LINK >	
⚠PS151	1-576-123-21	RINK, IC	

Ref. No.	Part No.	Description	Remark
		< TRANSISTOR >	
Q001	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q002	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q003	8-729-216-22	TRANSISTOR 2SA1162	
Q005	8-729-013-04	TRANSISTOR 2SC4851	
Q006	8-729-013-04	TRANSISTOR 2SC4851	
Q007	8-729-013-04	TRANSISTOR 2SC4851	
Q008	8-729-013-04	TRANSISTOR 2SC4851	
Q010	8-729-905-12	TRANSISTOR DTA144EU	
Q011	8-729-905-12	TRANSISTOR DTA144EU	
Q012	8-729-905-12	TRANSISTOR DTA144EU	
Q013	8-729-905-12	TRANSISTOR DTA144EU	
Q014	8-729-904-07	TRANSISTOR FMG2	
Q015	8-729-904-07	TRANSISTOR FMG2	
Q016	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q017	8-729-905-23	TRANSISTOR 2SA1576-R	
Q018	8-729-905-12	TRANSISTOR DTA144EU	
Q071	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q072	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q073	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q075	8-729-905-18	TRANSISTOR DTC144EU	
Q076	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q077	8-729-905-18	TRANSISTOR DTC144EU	
Q078	8-729-905-18	TRANSISTOR DTC144EU	
Q079	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q080	8-729-012-50	TRANSISTOR 2SC4400-3/4/5	
Q081	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q082	8-729-905-18	TRANSISTOR DTC144EU	
Q084	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q085	8-729-420-12	TRANSISTOR XN4213	
Q086	8-729-012-50	TRANSISTOR 2SC4400-3/4/5	
Q087	8-729-905-12	TRANSISTOR DTA144EU	
Q088	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q089	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q091	8-729-905-12	TRANSISTOR DTA144EU	
Q092	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q151	8-729-907-00	TRANSISTOR DTC114EU	
Q261	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q262	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q263	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q264	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q265	8-729-905-23	TRANSISTOR 2SA1576-R	
Q302	8-729-905-23	TRANSISTOR 2SA1576-R	
Q304	8-729-423-52	TRANSISTOR 2SC3931-C	
Q306	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q307	8-729-905-23	TRANSISTOR 2SA1576-R	
Q309	8-729-905-18	TRANSISTOR DTC144EU	
Q310	8-729-905-18	TRANSISTOR DTC144EU	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
Q313	8-729-402-78	TRANSISTOR XN6401	
Q314	8-729-106-60	TRANSISTOR 2SB1115A-YQ	
Q315	8-729-905-23	TRANSISTOR 2SA1576-R	
Q316	8-729-905-18	TRANSISTOR DTC144EU	
Q404	8-729-905-18	TRANSISTOR DTC144EU	
Q405	8-729-824-05	TRANSISTOR 3SK248	
Q409	8-729-905-09	TRANSISTOR DTA144WU	
Q410	8-729-402-78	TRANSISTOR XN6401	
Q411	8-729-403-06	TRANSISTOR XN1113	
Q412	8-729-905-18	TRANSISTOR DTC144EU	
Q413	8-729-905-18	TRANSISTOR DTC144EU	
Q414	8-729-423-52	TRANSISTOR 2SC3931-C	
Q415	8-729-824-02	TRANSISTOR 2SA1838	
Q417	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q420	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q421	8-729-905-18	TRANSISTOR DTC144EU	
Q422	8-729-823-16	TRANSISTOR 2SC4555-5. 6. 7	
Q423	8-729-823-16	TRANSISTOR 2SC4555-5. 6. 7	
Q424	8-729-905-18	TRANSISTOR DTC144EU	
Q425	8-729-421-90	TRANSISTOR XN4113	
Q426	8-729-117-73	TRANSISTOR 2SC4178-F14	
Q429	8-729-905-18	TRANSISTOR DTC144EU	
Q430	8-729-423-52	TRANSISTOR 2SC3931-C	
Q431	8-729-423-52	TRANSISTOR 2SC3931-C	
Q432	8-729-402-81	TRANSISTOR XN4501	
Q433	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q434	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q435	8-729-905-12	TRANSISTOR DTA144EU	
Q437	8-729-905-23	TRANSISTOR 2SA1576-R	
Q438	8-729-423-52	TRANSISTOR 2SC3931-C	
Q439	8-729-920-XX	TRANSISTOR DTA114EU	
Q440	8-729-905-23	TRANSISTOR 2SA1576-R	
Q441	8-729-905-23	TRANSISTOR 2SA1576-R	
Q443	8-729-905-18	TRANSISTOR DTC144EU	
Q501	8-729-117-73	TRANSISTOR 2SC4178-F14	
Q503	8-729-905-18	TRANSISTOR DTC144EU	
Q505	8-729-905-23	TRANSISTOR 2SA1576-R	
Q506	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q507	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q508	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q509	8-729-905-12	TRANSISTOR DTA144EU	
Q510	8-729-423-52	TRANSISTOR 2SC3931-C	
Q511	8-729-905-18	TRANSISTOR DTC144EU	
Q513	8-729-905-18	TRANSISTOR DTC144EU	
Q514	8-729-905-18	TRANSISTOR DTC144EU	
Q515	8-729-905-18	TRANSISTOR DTC144EU	
Q516	8-729-905-18	TRANSISTOR DTC144EU	
Q551	8-729-807-87	TRANSISTOR 2SB1295-UL6	
Q552	8-729-905-18	TRANSISTOR DTC144EU	
Q553	8-729-807-87	TRANSISTOR 2SB1295-UL6	
Q554	8-729-905-18	TRANSISTOR DTC144EU	
Q555	8-729-905-23	TRANSISTOR 2SA1576-R	
Q556	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q557	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q558	8-729-905-18	TRANSISTOR DTC144EU	
Q559	8-729-905-23	TRANSISTOR 2SA1576-R	
Q560	8-729-120-28	TRANSISTOR 2SC1623-L5L6	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R001	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R002	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R003	1-216-814-11	METAL CHIP 270 5% 1/16W	
R004	1-216-813-11	METAL CHIP 220 5% 1/16W	
R005	1-216-825-11	METAL CHIP 2. 2K 5% 1/16W	
R006	1-216-829-11	METAL CHIP 4. 7K 5% 1/16W	
R007	1-216-804-11	METAL CHIP 39 5% 1/16W	
R008	1-216-807-11	METAL CHIP 68 5% 1/16W	
R009	1-216-818-11	METAL CHIP 560 5% 1/16W	
R010	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R011	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R012	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R013	1-216-807-11	METAL CHIP 68 5% 1/16W	
R014	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R015	1-216-829-11	METAL CHIP 4. 7K 5% 1/16W	
R018	1-216-829-11	METAL CHIP 4. 7K 5% 1/16W	
R019	1-216-807-11	METAL CHIP 68 5% 1/16W	
R020	1-216-807-11	METAL CHIP 68 5% 1/16W	
R021	1-216-829-11	METAL CHIP 4. 7K 5% 1/16W	
R024	1-216-829-11	METAL CHIP 4. 7K 5% 1/16W	
R025	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R026	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R027	1-216-807-11	METAL CHIP 68 5% 1/16W	
R028	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R029	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R030	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R031	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R032	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R033	1-216-816-11	METAL CHIP 390 5% 1/16W	
R034	1-216-816-11	METAL CHIP 390 5% 1/16W	
R035	1-216-816-11	METAL CHIP 390 5% 1/16W	
R036	1-216-816-11	METAL CHIP 390 5% 1/16W	
R038	1-216-864-11	METAL CHIP 0 5% 1/16W	
R039	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R040	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R052	1-216-823-11	METAL CHIP 1. 5K 5% 1/16W	
R053	1-216-823-11	METAL CHIP 1. 5K 5% 1/16W	
R054	1-216-827-11	METAL CHIP 3. 3K 5% 1/16W	

Ref. No.	Part No.	Description				Remark
R057	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R058	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R059	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R060	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R061	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R062	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R063	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R064	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R065	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R066	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R071	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R072	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R073	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R074	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R075	1-216-818-11	METAL CHIP	560	5%	1/16W	
R076	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R077	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R078	1-216-817-11	METAL CHIP	470	5%	1/16W	
R079	1-216-817-11	METAL CHIP	470	5%	1/16W	
R080	1-216-815-11	METAL CHIP	330	5%	1/16W	
R081	1-216-864-11	METAL CHIP	0	5%	1/16W	
R082	1-216-817-11	METAL CHIP	470	5%	1/16W	
R083	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R084	1-216-814-11	METAL CHIP	270	5%	1/16W	
R085	1-216-818-11	METAL CHIP	560	5%	1/16W	
R087	1-216-814-11	METAL CHIP	270	5%	1/16W	
R088	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R089	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R090	1-216-819-11	METAL CHIP	680	5%	1/16W	
R091	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R092	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R093	1-216-813-11	METAL CHIP	220	5%	1/16W	
R095	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R096	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R097	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R098	1-216-813-11	METAL CHIP	220	5%	1/16W	
R099	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R100	1-216-818-11	METAL CHIP	560	5%	1/16W	
R101	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R102	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R103	1-216-820-11	METAL CHIP	820	5%	1/16W	
R104	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R105	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R106	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R107	1-216-817-11	METAL CHIP	470	5%	1/16W	
R108	1-216-817-11	METAL CHIP	470	5%	1/16W	
R109	1-216-819-11	METAL CHIP	680	5%	1/16W	
R110	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R111	1-216-821-11	METAL CHIP	1K	5%	1/16W	

Ref. No.	Part No.	Description				Remark
R112	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R114	1-216-817-11	METAL CHIP	470	5%	1/16W	
R118	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R119	1-216-817-11	METAL CHIP	470	5%	1/16W	
R120	1-216-810-11	METAL CHIP	120	5%	1/16W	
R121	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R122	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R123	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R124	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R125	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R126	1-216-817-11	METAL CHIP	470	5%	1/16W	
R127	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R128	1-216-805-11	METAL CHIP	47	5%	1/16W	
R129	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R130	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R131	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R132	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R133	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R134	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R135	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R136	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R145	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R151	1-216-174-00	METAL GLAZE	100	5%	1/8W	
R152	1-216-176-00	METAL GLAZE	120	5%	1/8W	
R153	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R154	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R155	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R156	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R157	1-216-852-11	METAL CHIP	390K	5%	1/16W	
R158	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R159	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R160	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R161	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R162	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R163	1-218-883-11	METAL CHIP	33K	0.50%	1/16W	
R164	1-218-849-11	METAL CHIP	1.2K	0.50%	1/16W	
R166	1-216-809-11	METAL CHIP	100	5%	1/16W	
R167	1-217-671-11	METAL CHIP	1	5%	1/10W	
R168	1-217-671-11	METAL CHIP	1	5%	1/10W	
R169	1-217-671-11	METAL CHIP	1	5%	1/10W	
R170	1-217-671-11	METAL CHIP	1	5%	1/10W	
R171	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R172	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R173	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R174	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R175	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R176	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R177	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R178	1-216-833-11	METAL CHIP	10K	5%	1/16W	

Ref. No.	Part No.	Description	Remark
R179	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R180	1-216-864-11	METAL CHIP 0 5% 1/16W	
R182	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R183	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R184	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R186	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R187	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R189	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R190	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R192	1-216-819-11	METAL CHIP 680 5% 1/16W	
R194	1-216-864-11	METAL CHIP 0 5% 1/16W	
R195	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R196	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R197	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R198	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R199	1-216-852-11	METAL CHIP 390K 5% 1/16W	
R200	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R201	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R202	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R203	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R204	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R205	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R206	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R207	1-216-820-11	METAL CHIP 820 5% 1/16W	
R211	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R213	1-216-864-11	METAL CHIP 0 5% 1/16W	
R215	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R216	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R217	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R218	1-216-844-11	METAL CHIP 82K 5% 1/16W	
R261	1-216-819-11	METAL CHIP 680 5% 1/16W	
R262	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R263	1-216-811-11	METAL CHIP 150 5% 1/16W	
R264	1-216-819-11	METAL CHIP 680 5% 1/16W	
R265	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R266	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R267	1-216-809-11	METAL CHIP 100 5% 1/16W	
R268	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R269	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R270	1-216-819-11	METAL CHIP 680 5% 1/16W	
R271	1-216-813-11	METAL CHIP 220 5% 1/16W	
R272	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R273	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R274	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R275	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R276	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R277	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R278	1-218-313-11	METAL CHIP 560 0.50% 1/16W	
R279	1-216-821-11	METAL CHIP 1K 5% 1/16W	

Ref. No.	Part No.	Description	Remark
R280	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R281	1-216-819-11	METAL CHIP 680 5% 1/16W	
R282	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R283	1-216-820-11	METAL CHIP 820 5% 1/16W	
R284	1-216-811-11	METAL CHIP 150 5% 1/16W	
R285	1-216-819-11	METAL CHIP 680 5% 1/16W	
R286	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R287	1-216-864-11	METAL CHIP 0 5% 1/16W	
R288	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R290	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R291	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R292	1-216-852-11	METAL CHIP 390K 5% 1/16W	
R293	1-216-864-11	METAL CHIP 0 5% 1/16W	
R294	1-216-848-11	METAL CHIP 180K 5% 1/16W	
R295	1-216-864-11	METAL CHIP 0 5% 1/16W	
R296	1-216-864-11	METAL CHIP 0 5% 1/16W	
R301	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R302	1-218-701-11	METAL CHIP 2.4K 0.50% 1/16W	
R303	1-216-817-11	METAL CHIP 470 5% 1/16W	
R304	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R305	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R306	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R307	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R308	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R309	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R310	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R312	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R313	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R314	1-216-817-11	METAL CHIP 470 5% 1/16W	
R315	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R316	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R317	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R318	1-216-804-11	METAL CHIP 39 5% 1/16W	
R319	1-216-804-11	METAL CHIP 39 5% 1/16W	
R320	1-216-811-11	METAL CHIP 150 5% 1/16W	
R321	1-216-804-11	METAL CHIP 39 5% 1/16W	
R322	1-216-804-11	METAL CHIP 39 5% 1/16W	
R329	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R330	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R331	1-216-791-11	METAL CHIP 3.3 5% 1/16W	
R332	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R333	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R334	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R335	1-216-853-11	METAL CHIP 470K 5% 1/16W	
R336	1-216-853-11	METAL CHIP 470K 5% 1/16W	
R337	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R338	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R340	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R345	1-216-849-11	METAL CHIP 220K 5% 1/16W	

Ref. No.	Part No.	Description			Remark
R403	1-216-833-11	METAL CHIP	10K	5%	1/16W
R404	1-216-864-11	METAL CHIP	0	5%	1/16W
R405	1-216-856-11	METAL CHIP	820K	5%	1/16W
R408	1-216-841-11	METAL CHIP	47K	5%	1/16W
R409	1-216-820-11	METAL CHIP	820	5%	1/16W
R410	1-216-821-11	METAL CHIP	1K	5%	1/16W
R411	1-216-804-11	METAL CHIP	39	5%	1/16W
R412	1-216-804-11	METAL CHIP	39	5%	1/16W
R413	1-218-895-11	METAL CHIP	100K	0.50%	1/16W
R414	1-216-853-11	METAL CHIP	470K	5%	1/16W
R415	1-216-845-11	METAL CHIP	100K	5%	1/16W
R419	1-216-818-11	METAL CHIP	560	5%	1/16W
R420	1-216-821-11	METAL CHIP	1K	5%	1/16W
R421	1-216-839-11	METAL CHIP	33K	5%	1/16W
R422	1-216-836-11	METAL CHIP	18K	5%	1/16W
R423	1-216-821-11	METAL CHIP	1K	5%	1/16W
R424	1-216-833-11	METAL CHIP	10K	5%	1/16W
R425	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R426	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R427	1-216-837-11	METAL CHIP	22K	5%	1/16W
R428	1-218-849-11	METAL CHIP	1.2K	0.50%	1/16W
R429	1-218-859-11	METAL CHIP	3.3K	0.50%	1/16W
R430	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R431	1-216-833-11	METAL CHIP	10K	5%	1/16W
R433	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R434	1-216-821-11	METAL CHIP	1K	5%	1/16W
R435	1-216-821-11	METAL CHIP	1K	5%	1/16W
R436	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R437	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R438	1-216-821-11	METAL CHIP	1K	5%	1/16W
R439	1-216-833-11	METAL CHIP	10K	5%	1/16W
R440	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R441	1-216-815-11	METAL CHIP	330	5%	1/16W
R442	1-216-814-11	METAL CHIP	270	5%	1/16W
R443	1-216-837-11	METAL CHIP	22K	5%	1/16W
R444	1-216-821-11	METAL CHIP	1K	5%	1/16W
R445	1-216-833-11	METAL CHIP	10K	5%	1/16W
R446	1-216-814-11	METAL CHIP	270	5%	1/16W
R447	1-216-813-11	METAL CHIP	220	5%	1/16W
R448	1-216-813-11	METAL CHIP	220	5%	1/16W
R449	1-216-833-11	METAL CHIP	10K	5%	1/16W
R450	1-216-833-11	METAL CHIP	10K	5%	1/16W
R451	1-216-811-11	METAL CHIP	150	5%	1/16W
R452	1-216-817-11	METAL CHIP	470	5%	1/16W
R453	1-216-821-11	METAL CHIP	1K	5%	1/16W
R454	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R456	1-216-864-11	METAL CHIP	0	5%	1/16W
R460	1-216-828-11	METAL CHIP	3.9K	5%	1/16W

Ref. No.	Part No.	Description			Remark
R461	1-216-833-11	METAL CHIP	10K	5%	1/16W
R461	1-216-841-11	METAL CHIP	47K	5%	1/16W
R462	1-216-841-11	METAL CHIP	47K	5%	1/16W
R463	1-216-841-11	METAL CHIP	47K	5%	1/16W
R464	1-218-839-11	METAL CHIP	470	0.50%	1/16W
R465	1-218-837-11	METAL CHIP	390	0.50%	1/16W
R466	1-216-841-11	METAL CHIP	47K	5%	1/16W
R467	1-216-841-11	METAL CHIP	47K	5%	1/16W
R468	1-216-841-11	METAL CHIP	47K	5%	1/16W
R469	1-216-833-11	METAL CHIP	10K	5%	1/16W
R470	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R471	1-216-841-11	METAL CHIP	47K	5%	1/16W
R472	1-216-833-11	METAL CHIP	10K	5%	1/16W
R473	1-216-835-11	METAL CHIP	15K	5%	1/16W
R478	1-216-833-11	METAL CHIP	10K	5%	1/16W
R479	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R480	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R481	1-216-821-11	METAL CHIP	1K	5%	1/16W
R482	1-216-821-11	METAL CHIP	1K	5%	1/16W
R483	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R484	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R485	1-216-820-11	METAL CHIP	820	5%	1/16W
R486	1-216-819-11	METAL CHIP	680	5%	1/16W
R487	1-216-817-11	METAL CHIP	470	5%	1/16W
R488	1-216-836-11	METAL CHIP	18K	5%	1/16W
R489	1-216-837-11	METAL CHIP	22K	5%	1/16W
R490	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R491	1-216-811-11	METAL CHIP	150	5%	1/16W
R492	1-216-813-11	METAL CHIP	220	5%	1/16W
R493	1-216-814-11	METAL CHIP	270	5%	1/16W
R495	1-216-818-11	METAL CHIP	560	5%	1/16W
R497	1-216-816-11	METAL CHIP	390	5%	1/16W
R498	1-216-817-11	METAL CHIP	470	5%	1/16W
R499	1-216-819-11	METAL CHIP	680	5%	1/16W
R500	1-216-815-11	METAL CHIP	330	5%	1/16W
R501	1-216-819-11	METAL CHIP	680	5%	1/16W
R504	1-216-816-11	METAL CHIP	390	5%	1/16W
R506	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R507	1-216-819-11	METAL CHIP	680	5%	1/16W
R508	1-216-864-11	METAL CHIP	0	5%	1/16W
R510	1-216-833-11	METAL CHIP	10K	5%	1/16W
R511	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R512	1-216-818-11	METAL CHIP	560	5%	1/16W
R513	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R514	1-216-821-11	METAL CHIP	1K	5%	1/16W
R516	1-216-821-11	METAL CHIP	1K	5%	1/16W
R517	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R518	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R520	1-218-895-11	METAL CHIP	100K	0.50%	1/16W

Ref. No.	Part No.	Description	Remark
R521	1-216-864-11	METAL CHIP 0 5%	1/16W
R522	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
R523	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
R524	1-216-831-11	METAL CHIP 6.8K 5%	1/16W
R525	1-216-830-11	METAL CHIP 5.6K 5%	1/16W
R526	1-216-831-11	METAL CHIP 6.8K 5%	1/16W
R527	1-216-832-11	METAL CHIP 8.2K 5%	1/16W
R528	1-216-828-11	METAL CHIP 3.9K 5%	1/16W
R529	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R530	1-216-817-11	METAL CHIP 470 5%	1/16W
R531	1-216-833-11	METAL CHIP 10K 5%	1/16W
R532	1-216-833-11	METAL CHIP 10K 5%	1/16W
R533	1-216-823-11	METAL CHIP 1.5K 5%	1/16W
R534	1-216-823-11	METAL CHIP 1.5K 5%	1/16W
R535	1-216-822-11	METAL CHIP 1.2K 5%	1/16W
R536	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R537	1-216-822-11	METAL CHIP 1.2K 5%	1/16W
R540	1-216-845-11	METAL CHIP 100K 5%	1/16W
R541	1-216-826-11	METAL CHIP 2.7K 5%	1/16W
R545	1-216-864-11	METAL CHIP 0 5%	1/16W
R546	1-216-845-11	METAL CHIP 100K 5%	1/16W
R547	1-216-864-11	METAL CHIP 0 5%	1/16W
R549	1-216-842-11	METAL CHIP 56K 5%	1/16W
R550	1-216-841-11	METAL CHIP 47K 5%	1/16W
R551	1-216-833-11	METAL CHIP 10K 5%	1/16W
R552	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
R553	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
R554	1-216-827-11	METAL CHIP 3.3K 5%	1/16W
R555	1-216-821-11	METAL CHIP 1K 5%	1/16W
R556	1-216-844-11	METAL CHIP 82K 5%	1/16W
R558	1-216-864-11	METAL CHIP 0 5%	1/16W
R559	1-216-857-11	METAL CHIP 1M 5%	1/16W
R560	1-216-864-11	METAL CHIP 0 5%	1/16W
R562	1-216-864-11	METAL CHIP 0 5%	1/16W
R563	1-216-839-11	METAL CHIP 33K 5%	1/16W
R564	1-216-842-11	METAL CHIP 56K 5%	1/16W
R565	1-216-817-11	METAL CHIP 470 5%	1/16W
R566	1-216-821-11	METAL CHIP 1K 5%	1/16W
R567	1-216-821-11	METAL CHIP 1K 5%	1/16W
R568	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R569	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R570	1-216-821-11	METAL CHIP 1K 5%	1/16W
R571	1-216-821-11	METAL CHIP 1K 5%	1/16W
R572	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R573	1-216-821-11	METAL CHIP 1K 5%	1/16W
R574	1-216-844-11	METAL CHIP 82K 5%	1/16W
R576	1-216-864-11	METAL CHIP 0 5%	1/16W
R577	1-216-853-11	METAL CHIP 470K 5%	1/16W
R578	1-216-857-11	METAL CHIP 1M 5%	1/16W

Ref. No.	Part No.	Description	Remark
R580	1-216-839-11	METAL CHIP 33K 5%	1/16W
R581	1-216-842-11	METAL CHIP 56K 5%	1/16W
R582	1-216-817-11	METAL CHIP 470 5%	1/16W
R583	1-216-826-11	METAL CHIP 2.7K 5%	1/16W
R584	1-216-821-11	METAL CHIP 1K 5%	1/16W
R585	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R586	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R587	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R588	1-216-841-11	METAL CHIP 47K 5%	1/16W
R589	1-216-833-11	METAL CHIP 10K 5%	1/16W
R590	1-216-839-11	METAL CHIP 33K 5%	1/16W
R591	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R595	1-216-833-11	METAL CHIP 10K 5%	1/16W
R596	1-216-833-11	METAL CHIP 10K 5%	1/16W

< NETWORK RESISTOR >

RB151	1-236-432-11	NETWORK, RES 47K	
RB152	1-236-448-11	NETWORK, RES 1.0M	
RB153	1-236-432-11	NETWORK, RES 47K	
RB154	1-236-432-11	NETWORK, RES 47K	
RB155	1-236-412-11	NETWORK, RES 1.0K	
RB156	1-236-412-11	NETWORK, RES 1.0K	
RB157	1-236-424-11	NETWORK, RES 10K	
RB158	1-236-424-11	NETWORK, RES 10K	
RB159	1-236-424-11	NETWORK, RES 10K	
RB160	1-236-432-11	NETWORK, RES 47K	
RB161	1-236-424-11	NETWORK, RES 10K	
RB162	1-236-444-11	NETWORK, RES 470K	
RB163	1-236-440-11	NETWORK, RES 220K	
RB164	1-236-408-11	NETWORK, RES 470	

< VARIABLE RESISTOR >

RV551	1-238-086-11	RES, ADJ, CERMET 470	
RV551	1-238-852-11	RES, ADJ, CERMET 470	

< FLEXIBLE BOARD >

W002	1-642-238-11	FP-484 FLEXIBLE BOARD	
W152	1-642-236-11	FP-482 FLEXIBLE BOARD	
W302	1-642-237-11	FP-483 FLEXIBLE BOARD	
W303	1-642-241-11	FP-519 FLEXIBLE BOARD	
W304	1-642-242-11	FP-520 FLEXIBLE BOARD	

< VIBRATOR >

X151	1-579-367-21	VIBRATOR, CRYSTAL (11.89MHz)	
X261	1-579-557-11	VIBRATOR, CRYSTAL (11.58MHz)	
X501	1-579-365-21	VIBRATOR, CRYSTAL (3.58MHz)	

****

MISCELLANEOUS

****

Ref.No.	Part No.	Description	Remark
3	1-537-297-21	TERMINAL BOARD, BATTERY	
19	1-542-180-11	MICROPHONE ASSY	
29	1-944-055-11	HARNESS (CD-26)	
61	1-466-689-21	SWITCH BLOCK, CONTROL (CF-4)	
63	1-466-688-51	SWITCH BLOCK, COTROL (FK-4)	
404	1-547-529-21	FILTER BLOCK, OPTICAL (OFB-03-03)	
⚠F901	1-532-778-21	FUSE, MICRO (1.6A 125V)	
⚠F902	1-532-778-21	FUSE, MICRO (1.6A 125V)	
⚠F903	1-532-778-21	FUSE, MICRO (1.6A 125V)	
IC301	A-7030-298-A	CCD BLOCK ASSY (AUTO) (CCD IMAGER)	
M901	A-7048-559-A	DRUM BLOCK ASSY (DGH-89A-R)	
M902	8-835-329-12	MOTOR, DC U-21A (CAPSTAN)	
M903	1-541-607-21	MOTOR, DC (LA12G-344VA) (LOADING)	
M904	3-708-445-01	METER, IG (IRIS)	
M905	3-708-443-01	MOTOR ASSY, STEPPING (FOCUS)	
M906	3-708-442-01	MOTOR ASSY, PZ (ZOOM)	
SE101	1-466-700-11	SENSOR, ANGLE SPEED (YS)	
SE102	1-466-700-11	SENSOR, ANGLE SPEED (PS)	
⚠V901	1-452-565-11	CRT ASSY (M01KTA80WB)	

****

ACCESSORIES & PACKING MATERIALS

****

Ref.No.	Part No.	Description	Remark
	A-6768-253-A	RF ADAPTOR (RFU-90UC) (TR101)	
	A-6767-816-A	RF ADAPTOR (RFU-89NA) (TR805)	
*	1-571-163-31	SWITCH, ANTENNA CHANGE (CABLE) (TR805)	
	1-575-334-11	CORD, CONNECTION (S video connecting cable)	
	1-575-335-21	CORD, CONNECTION (A/V connecting cable)	
	1-693-092-21	REMOTE COMMANDER (CAM CODER) (RMT-508)	
	3-738-517-01	BELT (S), SHOULDER	
	3-754-482-22	MANUAL, INSTRUCTION (ENGLISH) (TR101)	
	3-754-482-32	MANUAL, INSTRUCTION (FRENCH) (TR101:Canadian)	
	3-755-151-41	MANUAL, INSTRUCTION (ENGLISH, SPANISH) (TR805)	
	3-755-151-51	MANUAL, INSTRUCTION (CHINESE) (TR805:E)	
	3-755-248-41	MANUAL, INSTRUCTION, SIMPLICITY (Hankul alphabet) (TR805:Tourist)	
*	3-795-581-21	SAFEGUARD (SONY), IMPORTANT (TR101:US)	
*	3-943-154-11	HOLDER, REMOTE CONTROL	
*	3-947-224-01	INDIVIDUAL CARTON (TR101)	
*	3-947-224-41	INDIVIDUAL CARTON (TR805)	
*	3-947-225-01	CUSHION (UPPER)	
*	3-947-226-01	CUSHION (LOWER)	
**	AC-V30	AC POWER ADAPTOR	
***	NP-55H	BATTERY PACK	

Note.

** MARK PARTS IS AVAILABLE FOR REPAIR SERVICE.
*** MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORY.

****

HARDWARE LIST

Ref.No.	Part No.	Description	Remark
#1	7-624-102-04	STOP RING 1.5, TYPE -E	

****

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

SECTION 7

CAMERA SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 252.

7-1. PREPARATIONS BEFORE ADJUSTMENT (CAMERA SECTION)

7-1-1. List of Service Tools

- Oscilloscope
- Adjusting driver
- Stabilized power supply
- Color monitor
- Vectorscope
- Digital voltmeter

Ref. No.	Name	Part Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto white balance adjustment/check White balance adjustment/check
J-2	ND filter 1.0	J-6080-808-A	Max gain adjustment (2 used) White balance check
	ND filter 0.4	J-6080-806-A	Max gain adjustment
	ND filter 0.3	J-6080-818-A	White balance adjustment
	ND filter 0.1	J-6080-807-A	Max gain adjustment
J-3	Pattern box PTB-500	J-6029-140-A	
J-4	Color chart for pattern box	J-6020-250-A	
J-5	Adjusting remote control unit (RM-95-remodeled in part)^Note 1	J-6082-053-A	
J-6	Siemens star	J-6080-875-A	For checking flange back
J-7	Measuring pin jig for camera section	J-6082-139-A	For camera section adjustment
J-8	Measuring pin jig for video section	J-6082-140-A	For video section adjustment
J-9	Extension cord (48P, 0.8 mm)	J-6082-177-A	For extension between CF-29 board and VC-103 board (CN922)
J-10	Extension cord (24P, 0.8 mm)	J-6082-178-A	For extension between VD-21 board (CN001) and SE-22 board (CN101) (During the repair of the camera section)
J-11	Relay board (21P, 0.5 mm)^Note 2	J-6082-176-A	For extension between the lens block (FPC) and VC-103 board (CN851) (During the repair of the camera section)
J-12	Extension cord (16P, 0.8 mm)	J-6082-136-A	For extension between CD-72 board (CN301) and VC-103 board (CN801) (During the repair of the camera section)
J-13	Extension cord (20P, 0.5 mm)^Note 2	J-6082-138-A	For extension between the lens block (FPC) and VC-103 board (CN851) (During the repair of the camera section)

Note 1: If the micro processor IC in the adjusting remote control unit is not the new micro processor (UPD7503G-C56-12), the switchover of the page cannot be carried out. In this case, replace with the new micro processor (8-759-148-35).

Note 2: The extension code (J-6082-179-A) is also attached with a 21P, 0.5 mm code. Connect this code to the relay board (J-6082-176-A) for extensions between the lens block (FPC) and VC-103 board (CN851).

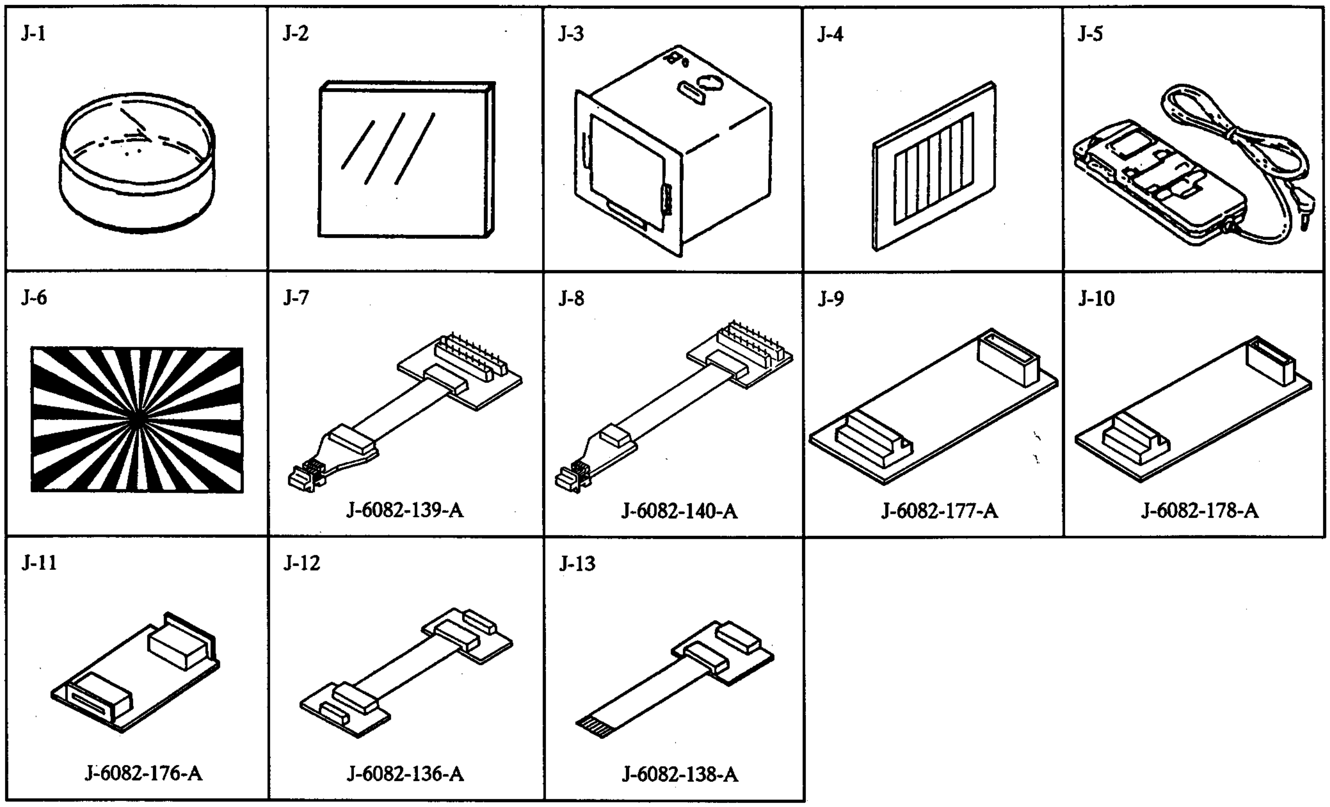

J-1
J-2
J-3
J-4
J-5
J-6
J-7
J-6082-139-A
J-8
J-6082-140-A
J-9
J-6082-177-A
J-10
J-6082-178-A
J-11
J-6082-176-A
J-12
J-6082-136-A
J-13
J-6082-138-A

Fig. 7-1.

7-1-2. Preparations

Note 1: For further details on how to remove the cabinet and each board, refer to "1. Disassembly".

Note 2: When performing adjustments only, it is not necessary to separate the lens block and VC-103 board.

1) Connect the equipments for adjustment as shown in Fig. 7-3.
2) It is not necessary to connect the front panel assembly (including the MA-109 and RM-54 boards) and AU-118 board (audio board).
3) The EVF (Electronic viewfinder) is required for checking the white balance mode and shutter speeds. The same contents will be displayed on the monitor TV by turning on the data screen. If the EVF is not required, remove the VS-84 board CN301.

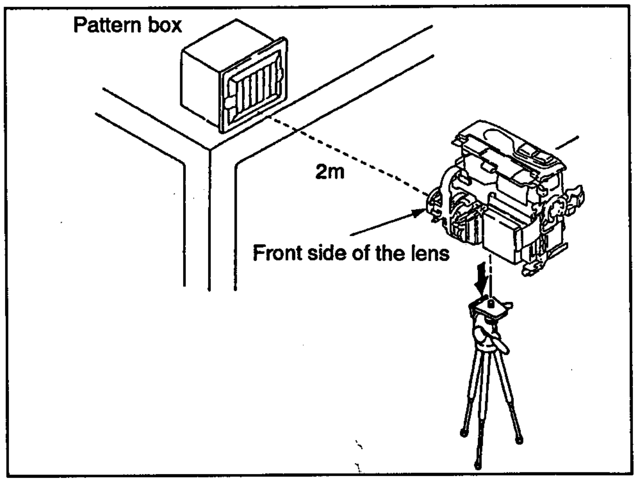
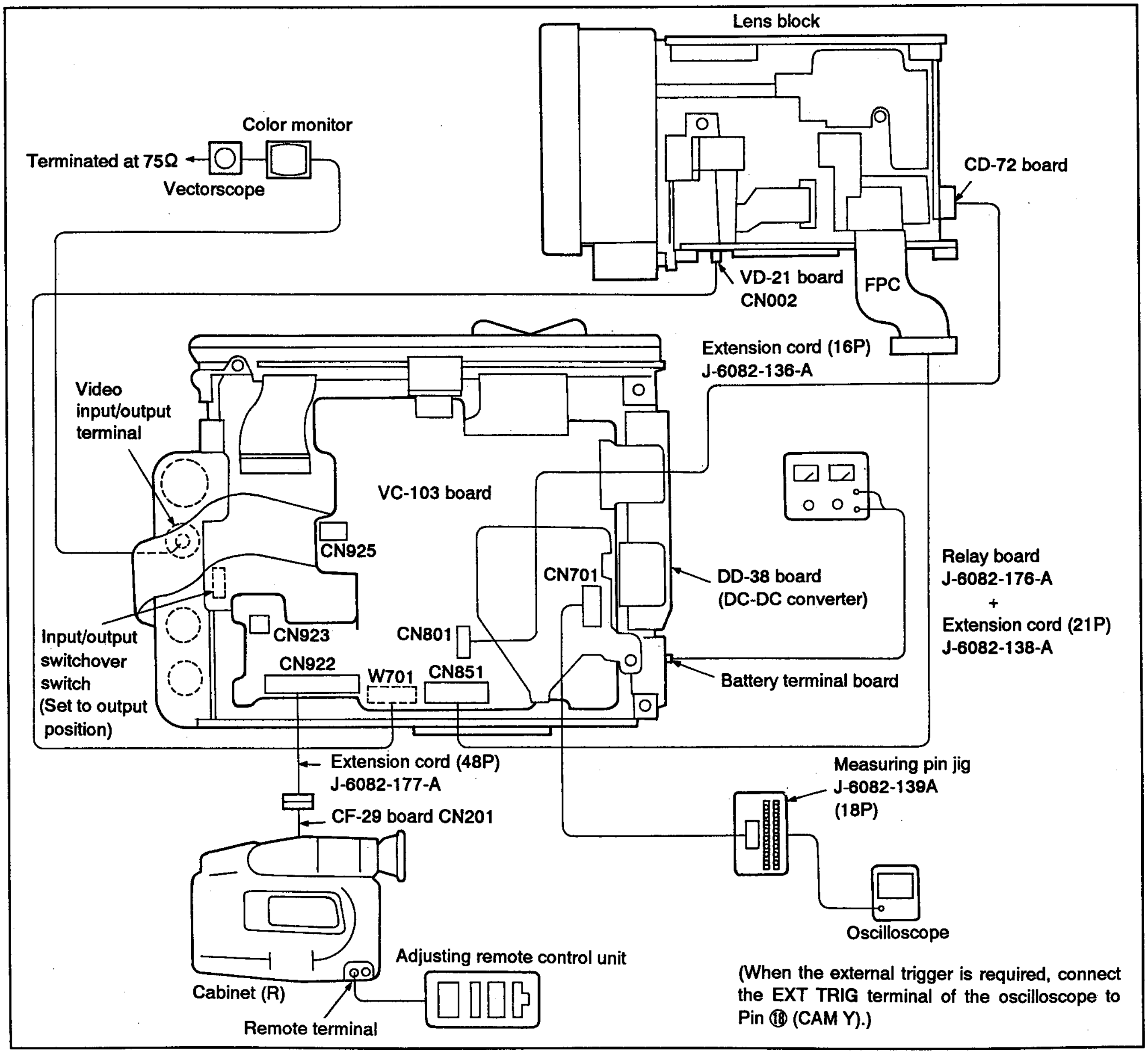

Pattern box
2m
Front side of the lens

Fig. 7-2.


Lens block
Color monitor
Terminated at 75Ω
Vectorscope
CD-72 board
VD-21 board
CN002
FPC
Extension cord (16P)
J-6082-136-A
Video
input/output
terminal
VC-103 board
CN925
CN701
DD-38 board
(DC-DC converter)
Relay board
J-6082-176-A
+
Extension cord (21P)
J-6082-138-A
Input/output
switchover
switch
(Set to output
position)
CN923
CN801
CN922
W701
CN851
Battery terminal board
Extension cord (48P)
J-6082-177-A
CF-29 board CN201
Measuring pin jig
J-6082-139A
(18P)
Oscilloscope
Adjusting remote control unit
Cabinet (R)
Remote terminal

(When the external trigger is required, connect the EXT TRIG terminal of the oscilloscope to Pin ⑱ (CAM Y).)

Fig. 7-3.

7-1-3. Precautions

1. Switch settings

Adjust the switches to the following positions, and perform the adjustments without inserting the tape, unless specified otherwise.

1. Camera/video power switch (FK-51 board S119) · Camera
2. Standby switch (FK-51 board S118) ················ Standby
3. Input/output switchover switch (Pin jack board) ··· Output
4. Movement correction switch (CF-29 board S216) ······Off
5. Auto-lock switch (CF-29 board S217)····················Off
6. Focus button (CF-29 board S213) ····················Manual
7. Shutter speed button (CF-29 board S312)··· Normal (1/60)
8. Brightness button (CF-29 board S211) ··········Automatic

2. Adjustment Procedure

Perform in the given order as a rule.

3. Subject

1) Color bar chart (Standard picture frame)
   Adjust the picture frame as shown in Fig. 7-4. if adjustments are performed using the color bar chart. (Standard picture frame)
2) White pattern (Standard picture frame)
   Remove the color bar chart from the pattern box, and adjust the zoom lever so that the white pattern becomes the same size and is in the same position as the color bar chart (Standard picture frame).

Color bar chart standard picture frame

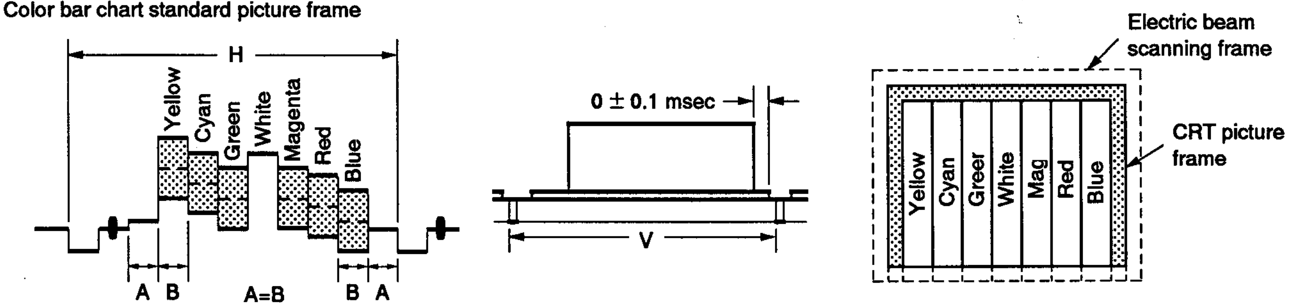


Fig. a. (Video input/output terminal output waveform)

Fig. b. (TV Monitor picture)

Adjust the camera zoom and direction to obtain the output waveform shown in Fig. a and the TV monitor picture shown in Fig. b.

Fig. 7-4.

3) Chart for flange back adjustment
   Combine a white A0 size (1189 mm× 841 mm) paper to a black one, and make the chart shown in Fig. 7-5.

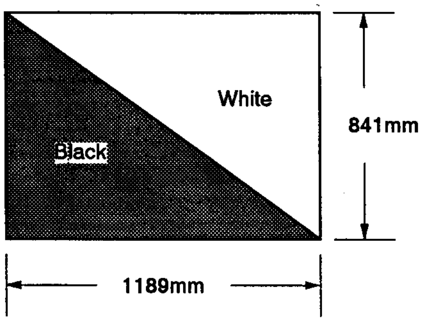


Fig. 7-5.

Note: Use the non-reflecting and non-glazing vellum paper whose size is more than A0, and make the boundary between white and black to be smoothly flat.

7-1-4. Adjusting Remote Control Unit

The camera section is adjusted by changing the constant and the coefficient of the digital signal processing calculation, or modifying the output voltage of EVR IC (VC-103 board IC705). These processes are carried out by the camera micro processor (VC-103 board IC702). This micro processor reads the data written in the non-volatile memory (VC-103 board IC701: EEPROM), and transmits it to the digital signal processing circuit and EVR.

The adjusting remote control unit is used for rewriting the adjustment data written in the non-volatile memory necessary for performing the adjustments.

The adjusting remote control unit uses the remote control signal line (LANC) to correspond mutually with the camera micro processor. The page, address and the up/down command of the data can be transmitted from the remote control unit to the camera micro processor. On the other hand, the page, address, and data can also be transmitted the other way round.

1. Using the adjusting remote control unit

1) Connect the adjusting remote control unit to the remote terminal (LJ-6 board J511).
2) Adjust the HOLD switch of the adjusting remote control unit to HOLD (SERVICE position).
   If it has been properly connected, the LCD on the adjusting remote control unit will show the display in Fig. 7-6.

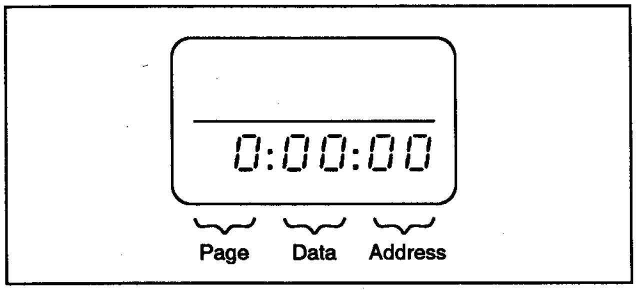


Fig. 7-6.

3) Operate the adjusting remote control unit as follows.
   - Changing the page
     The page will increase when the EDIT SEARCH+ button is pressed. It will decrease when the EDIT SEARCH– button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Display on LCD	0	1	2	3	4	5	6	7	8	9	A	b	c	d	E	F
Decimal notation conversion value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Table 7-1.

   - Changing the address
     The address will increase when the FF (▶▶) button is pressed, and decrease when the REW (◀◀) button is pressed. There are altogether 256 addresses, from 00 to FF. However, the addresses which are not used for the adjustments will not be displayed.
   - Changing the data (Data setting)
     The data will increase when the PLAY (▶) button is pressed, and decrease when the STOP (■) button is pressed.
     There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     It is necessary to press the PAUSE button to write the adjustment data (F page, E page, D page) in the non-volatile memory.
     (The new adjustment data will not be recorded in the non-volatile memory if this operation is not performed.)
4) Select page: 6, address: 00, and adjust the data to 01 (window OFF adjustment mode) or 11 (window ON adjustment mode). This releases the write protect of page F, and the camera section (F page) can be adjusted.
   (To adjust the titler system (D page), adjust the data of page: 01, address: 00 to 01, and release the protect of page D.)
5) After completing all adjustments, turn off the main power (6.3V) once. This can release the adjustment mode (adjustment modes other than page E and page F).

2. Precautions upon using the adjusting remote control unit

The correct adjustment data may be erased at times, due to operation errors of the adjusting remote control unit. To prevent this from occurring, it is recommended that all adjustment data be recorded in the memory before beginning adjustments, and the new adjustment data be recorded in the memory after each adjustment.

7-1-5. Page F Address List

Note 1: The data listed in the adjustment data memo column are fixed values.

Note 2: The adjustment data initial values are the values immediately after performing "Page F, Page E Data Initialization" and "Page F, Page E Data Modification". They are different from the values after performing all the adjustments.

<table>
<tr><th rowspan="2">Address</th><th rowspan="2">Name</th><th rowspan="2" colspan="2">Function
[ ] indicate the adjustment voltage output terminal</th><th colspan="2">Adjustment data</th></tr>
<tr><th>Initial value</th><th>Memo column</th></tr>
<tr><td>00</td><td>ID</td><td colspan="2">Set ID</td><td>00</td><td>31</td></tr>
<tr><td>01</td><td>FADER LEVEL</td><td colspan="2">AE REF level modification during fader</td><td>E0</td><td>E0</td></tr>
<tr><td>02</td><td>FADER ENDTIM</td><td colspan="2">The setting of the AE REF modulation time during fader</td><td>10</td><td>10</td></tr>
<tr><td>03</td><td>CS SL</td><td colspan="2">Carrier balance adjustment</td><td>35</td><td></td></tr>
<tr><td>04</td><td>VSUB</td><td colspan="2">CCD imager V SUB adjustment [IC705 ③]</td><td>80</td><td></td></tr>
<tr><td>05</td><td>VPGH</td><td colspan="2">CCD imager VRG adjustment [IC705 ④]</td><td>80</td><td></td></tr>
<tr><td>06</td><td>VREF Y</td><td colspan="2">Camera core Y D/A standard voltage, SYNC level adjustment [IC705 ⑤]</td><td>7B</td><td></td></tr>
<tr><td>07</td><td>VREF C</td><td colspan="2">Camera core CHROMA D/A standard voltage, BURST level adjustment [IC705 ⑥]</td><td>99</td><td></td></tr>
<tr><td>08</td><td>HALL GAIN</td><td>Hall amplifier gain adjustment [IC705 ⑦]</td><td rowspan="2">HALL adjustment</td><td>75</td><td></td></tr>
<tr><td>09</td><td>HALL OFFSET</td><td>Hall amplifier offset adjustment [IC705 ⑧]</td><td>79</td><td></td></tr>
<tr><td>0A</td><td>E LOWLIGHT START</td><td colspan="2">Low luminance intensity REF level modulation start setting</td><td>20</td><td>20</td></tr>
<tr><td>0B</td><td>REF 2V</td><td colspan="2">2V standard voltage for hall device [IC705 ⑫]</td><td>68</td><td>68</td></tr>
<tr><td>0C</td><td>AD REF</td><td colspan="2">Black level setting during A/D conversion, A/D off set adjustment [IC705 ⑬]</td><td>72</td><td></td></tr>
<tr><td>0D</td><td>CORE DETH</td><td colspan="2">CCD correction control</td><td>04</td><td>04</td></tr>
<tr><td>0E</td><td>CORE VTR DELAY</td><td colspan="2">1HDL longitudinal setting during VTR playback</td><td>16</td><td>16</td></tr>
<tr><td>0F</td><td>CORE APCN4</td><td colspan="2">Horizontal aperture setting</td><td>B5</td><td>B5</td></tr>
<tr><td>10</td><td>CORE APCN5</td><td colspan="2">Vertical aperture setting</td><td>3F</td><td>3F</td></tr>
<tr><td>11</td><td>CORE EFECT</td><td colspan="2">Special effect control</td><td>A0</td><td>A0</td></tr>
<tr><td>12</td><td>CORE MATR</td><td colspan="2">BLUE matrix constant</td><td>26</td><td>26</td></tr>
<tr><td>13</td><td>CORE MATB</td><td colspan="2">RED matrix constant</td><td>6D</td><td>6D</td></tr>
<tr><td>14</td><td>CORE BURST LEVEL</td><td colspan="2">Burst flag level setting, color modulation ON/OFF
<table>
<tr><th>Data</th><th>Adjustment mode</th></tr>
<tr><td>2C</td><td>Normal level</td></tr>
<tr><td>2E</td><td>Color modulation stopped</td></tr>
</table></td><td>2C</td><td>2C</td></tr>
<tr><td>15</td><td>CORE CHROMA DLY</td><td colspan="2">Y/C delay adjustment</td><td>08</td><td>08</td></tr>
<tr><td>16</td><td>CORE Y SETUP</td><td colspan="2">Set up level setting</td><td>06</td><td>06</td></tr>
<tr><td>17</td><td>CORE VHAPCN</td><td colspan="2">Slice and level setting of the aperture signal</td><td>15</td><td>15</td></tr>
<tr><td>18</td><td>CORE B-Y GAIN</td><td>B–Y GAIN</td><td rowspan="4">Color reproduction adjustments</td><td>13</td><td></td></tr>
<tr><td>19</td><td>CORE R-Y GAIN</td><td>R–Y GAIN</td><td>11</td><td></td></tr>
<tr><td>1A</td><td>CORE R-Y HUE</td><td>R–Y HUE</td><td>FF</td><td></td></tr>
<tr><td>1B</td><td>CORE B-Y HUE</td><td>B–Y HUE</td><td>FD</td><td></td></tr>
<tr><td>1C</td><td>CS/APCCUT</td><td colspan="2">Low luminance intensity aperture and chroma suppress level</td><td>24</td><td>24</td></tr>
</table>

Table 7-2 (1).

Address	Name	Function [ ] Indicate the adjustment voltage output terminal		Adjustment data	
				Initial value	Memo column
1D	NEXT LINE DEFECT BIT	CCD correction pattern	CCD imager correction data write	00	
1E	CCD DEFECT0	CCD correction data		00	
1F	CCD DEFECT1	CCD correction data		00	
20	CCD DEFECT2	CCD correction data		00	
21	CCD DEFECT3	CCD correction data		00	
22	CCD DEFECT4	CCD correction data		00	
23	CCD DEFECT5	CCD correction data		00	
24	CCD DEFECT6	CCD correction data		00	
25	CCD DEFECT7	CCD correction data		00	
26	CCD DEFECT8	CCD correction data		00	
27	CCD DEFECT9	CCD correction data		00	
28	CCD DEFECT10	CCD correction data		00	
29	CCD DEFECT11	CCD correction data		00	
2A	CCD DEFECT12	CCD correction data		00	
2B	CCD DEFECT13	CCD correction data		00	
2C	CCD DEFECT14	CCD correction data		00	
2D	RREF L	3200k Red standard data LSB	Auto white balance preset adjustment	72	
2E	RREF H	3200k Red standard data MSB		5F	
2F	GREF L	3200k Green standard data LSB		D4	
30	GREF H	3200k Green standard data MSB		63	
31	BREF L	3200k Blue standard data LSB		3B	
32	BREF H	3200k Blue standard data MSB		2C	
33	RCONTREF	3200k RCONT adjustment value	Pre-white balance adjustment	42	
34	BCONTREF	3200k BCONT adjustment value		4A	
35	AWB NOWM R	Red regular correction coefficient	Auto white balance adjustment	7E	
36	AWB NORM B	Blue regular correction coefficient		96	
37	AWB SHUT IN	Indoor determination shutter data		A8	A8
38	ABW SHUT OUT	Outdoor determination shutter data		A0	A0
39	AWB IRIS IN	Indoor determination hall data	IRIS IN/OUT adjustment	79	
3A	AWB IRIS OUT	Outdoor determination hall data		7F	
3B	AWB G LEVEL	High luminance section green integral level		02	02
3C	AWB G WIDTH	High luminance section green integral level range		03	03
3D	DMAT HUE	Variable linear matrix HUE coefficient	Linear matrix adjustment	00	
3E	DMAT GAIN	Variable linear matrix GAIN coefficient		00	
3F	AWB SELECT	AWB mode selection		00	00
40	AWB DIFF	Standard difference from the outdoor fixed value		0A	0A
41	AWB BOTTOM SLP R	AWB incoming frame bottom R coefficient		30	30
42	AWB BOTTOM SLP B	AWB incoming frame bottom B coefficient		58	58
43	AWB MIDDLE SLP R	AWB incoming frame middle R coefficient		62	62
44	AWB MIDDLE SLP B	AWB incoming frame middle B coefficient		47	47
45	AWB TOP SLP R	AWB incoming frame top R coefficient		6C	6C
46	AWB TOP SLP B	AWB incoming frame top B coefficient		1A	1A

Table 7-2 (2).

Address	Name	Function [ ] Indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
47	AWB KEIKO R	AWB incoming frame fluorescent light R coefficient	66	66
48	AWB KEIKO B	AWB incoming frame fluorescent light B coefficient	18	18
49	AWB BOTTOM UP	AWB incoming frame bottom upper value	8C	8C
4A	AWB BOTTOM DWN	AWB incoming frame bottom lower value	6B	6B
4B	AWB MIDDLE UP	AWB incoming frame middle upper value	B8	B8
4C	AWB MIDDLE DWN	AWB incoming frame middle lower value	9F	9F
4D	AWB TOP UP	AWB incoming frame top upper value	80	80
4E	AWB TOP DWN	AWB incoming frame top lower value	66	66
4F	AWB KEIKO	AWB incoming frame fluorescent light output lower value	6C	6C
50	AWB KEIKO DWN	AWB incoming frame fluorescent light lower value	5C	5C
51	AWB R TOP LMT	AWB incoming frame Rcont upper value	6C	6C
52	AWB R DWN LMT	AWB incoming frame Rcont lower value	20	20
53	AWB B TOP LMT	AWB incoming frame Bcont upper value	83	83
54	AWB B IN TOP	AWB incoming frame Bcont	67	67
55	AWB B IN MAX	AWB incoming frame Bcont	5C	5C
56	AWB B OUT MIN	AWB incoming frame Bcont	5C	5C
57	AWB B OUT DWN	AWB incoming frame Bcont	4A	4A
58	AWB B DWN LMT	AWB incoming frame Bcont lower value	20	20
59	AWB LL LMT	Low luminance intensity limiter	06	06
5A	AWB T M DIVID	AWB incoming frame upper, middle border value	5B	5B
5B	AWB B M DIVID	AWB incoming frame middle, lower border value	3C	3C
5C	AWB DELAY TM	AWB tracking speed Data / Adjustment mode 01 / High speed tracking mode 10 / Normal	10	10
5D	AWB FAST TM	AWB initial high speed tracking amount	40	40
5E	AWB OUT HYS OFF	AWB outdoor hysteresis off difference	0C	0C
5F	AWB OUT B HYS	AWB outdoor hysteresis amount	06	06
60	AWB MODE	AWB adjustment mode Data / Adjustment mode 00 / Normal D0 / AWB adjustment mode F1 / Sampling display mode	00	00
61	AE REFL	Reference value (lower) for AE	00	00
62	AE REFH	Reference value (upper) for AE	1E	1E
63	AGC MIN	AGC MIN value (AGCREF value), IRIS level adjustment	E3	
64	AE MIML	Low luminance intensity side limiter (MAXGAIN), MAX GAIN adjustment	32	
65	AE MAXL	High luminance intensity side limiter (lower)	80	80
66	IRIS OFFSET	Iris ROM table OPEN side offset	D0	D0
67	AE KEISU	Correction coefficient during detection weighting	00	00

Table 7-2 (3).

Address	Name	Function [ ] Indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
68	AE FUNCTION	SW for turning each AE function ON and OFF	40	40
69	BL HOSEIH	Forcible back light level setting (upper)	40	40
6A	JITEISU DOWN	Constant during loop response, DOWN side	30	30
6B	JITEISU UP	Constant during loop response, UP side	10	10
6C	AE KNEE	KNEE setting value for AE	FF	FF
6D	ORETEN SET	Variable point due to time constant error amount	13	13
6E	OMOMIOUT	Outer frame weighting amount	40	40
6F	AFC WIDE	Coefficient required for the ANF integral loop	03	03
70	AFC GAIN	Loop gain of the flickerless loop	01	01
71	AFC LIMIL	Limiter corresponding to the error rate (Lower)	60	60
72	HIST P KEISU	Histocomp level setting P for counter light determination	20	20
73	HIST H KEISU	Histocomp level setting H for counter light determination	E0	E0
74	HIST L KEISU	Histocomp level setting L for counter light determination	90	90
75	GYKOU JITEISU	Constant during auto back light response	08	08
76	SUBN LIMIT	Limiter for counter light determination	40	40
77	FUZZY RULE1	Correction amount 1 for auto back light	90	90
78	FUZZY RULE2	Correction amount 2 for auto back light	C0	C0
79	FUZZY RULE3	Correction amount 3 for auto back light	B0	B0
7A	FUZZY RULE4	Correction amount 4 for auto back light	A0	A0
7B	FUZZY RULE5	Correction amount 5 for auto back light	70	70
7C	FUZZY RULE6	Correction amount 6 for auto back light	80	80
7D	FUZZY RULE7	Correction amount 7 for auto back light	A0	A0
7E	FUZZY RULE8	Correction amount 8 for auto back light	98	98
7F	FUZZY RULE9	Correction amount 9 for auto back light	90	90
80	FUZZY RULE10	Correction amount 10 for auto back light	78	78
81	IRIS MIN L	Not used		
82	IRIS MIN H	Not used		
83	DELTA SHUT GAIN	Not used		
84	AE WAKUH	Frame data for AE detection (vertical line)	0F	0F
85	AE WAKUV	Frame data for AE detection (horizontal line)	4F	4F
86	WIDE LIMIT	ZOOM limiter WIDE (lower) Flange back adjustment	DE	
87	WIDE LIMITH	ZOOM limiter WIDE (upper)	02	
88	TELE LIMIT	ZOOM limiter TELE (lower)	22	
89	TELE SIMITH	ZOOM limiter TELE (upper)	1D	
8A	STEP ZERO	Flange back value	65	
8B	STEP ZERO SPAN (VAP ONLY)	Flange back value 2	BE	
8C	ZOOM SPD FAST	Zoom speed (fast)	60	60
8D	ZOOM SPD SUPER	Zoom speed (For adjustment)	59	59
8E	ZS INIT SLOW	Zoom speed initial value (slow)	59	59
8F	ZS INIT FAST	Zoom speed initial value (fast)	59	59
90	ZMSPD DAMIN	Zoom speed D/A MIN value	3D	3D
91	ZS K	Zoom servo coefficient K	11	11

Table 7-2 (4).

Note 3: If the [ ] is camera micro processor version 1, refer to [Page F Data Modification] on page 159 for how to distinguish the versions.

<table>
<tr><th rowspan="2">Address</th><th rowspan="2">Name</th><th rowspan="2">Function
[ ] Indicate the adjustment voltage output terminal</th><th colspan="2">Adjustment data</th></tr>
<tr><th>Initial value</th><th>Memo column</th></tr>
<tr><td>92</td><td>ZS L</td><td>Zoom servo coefficient L</td><td>04</td><td>04</td></tr>
<tr><td>93</td><td>ZP HYS</td><td>Zoom potential hysteresis</td><td>03</td><td>03</td></tr>
<tr><td>94</td><td>ZOOM SPD SLOW</td><td>Zoom speed (slow)</td><td>22</td><td>22</td></tr>
<tr><td>95</td><td>AF MD2THL</td><td>MODE2 THR</td><td>20</td><td>20</td></tr>
<tr><td>96</td><td>MAXCHG THR</td><td>MAX value renewal THR</td><td>1A</td><td>1A</td></tr>
<tr><td>97</td><td>ERR THL</td><td>Wobbling width THR</td><td>18</td><td>18</td></tr>
<tr><td>98</td><td>WOB INTV</td><td>Wobbling second interval</td><td>04</td><td>04</td></tr>
<tr><td>99</td><td>ERRPOL THR</td><td>MODE2 error possible THR</td><td>13</td><td>13</td></tr>
<tr><td>9A</td><td>MAXCHK THR</td><td>MAX CHECK THR</td><td>12</td><td>12</td></tr>
<tr><td>9B</td><td>REWOB THR</td><td>Wobbling second THR</td><td>0A</td><td>0A</td></tr>
<tr><td>9C</td><td>MODE2 INOUT</td><td>MODE2 speed switchover</td><td>8B</td><td>8B</td></tr>
<tr><td>9D</td><td>SMLWD THR</td><td>Small frame THR</td><td>0A</td><td>0A</td></tr>
<tr><td>9E</td><td>ZOOM PULSE LIMIT</td><td>Maximum zoom pulse value</td><td>C6</td><td>C6</td></tr>
<tr><td>9F</td><td>ZOOM RIZE</td><td>Zoom rise minimum speed time</td><td>0A</td><td>0A</td></tr>
<tr><td>A0</td><td>FB CURVEPEAKL</td><td>Constant for flange back adjustment</td><td>F5</td><td>F5</td></tr>
<tr><td>A1</td><td>FB CURVEPEAKH</td><td>Constant for flange back adjustment</td><td>0B</td><td>0B</td></tr>
<tr><td>A2</td><td>FB ZOOMSH</td><td>Constant for flange back adjustment</td><td>5D</td><td>5D</td></tr>
<tr><td>A3</td><td>FB ZOOMSH</td><td>Constant for flange back adjustment</td><td>06</td><td>06</td></tr>
<tr><td>A4</td><td>LIMITREST WIDE</td><td>Zoom limiter WIDE side</td><td>14</td><td>14</td></tr>
<tr><td>A5</td><td>LIMITREST TELE</td><td>Zoom limiter TELE side</td><td>0F</td><td>0F</td></tr>
<tr><td>A6</td><td>FB PEAKTHR</td><td>Constant for flange back adjustment</td><td>FF</td><td>FF</td></tr>
<tr><td>A7</td><td>FB FOCUSZERO</td><td>Constant for flange back adjustment</td><td>1C</td><td>1C</td></tr>
<tr><td>A8</td><td>DET IRIS ALT</td><td>Iris variation check THR</td><td>02</td><td>02</td></tr>
<tr><td>A9</td><td>DET AGC ALT</td><td>AGC variation check THR</td><td>02</td><td>02</td></tr>
<tr><td>AA</td><td>LIMIT INSURANCE</td><td>Focus limiter insurance value</td><td>02</td><td>02</td></tr>
<tr><td>AB</td><td>FOCUS MODE</td><td>Focus mode
<table>
<tr><th>Data</th><th>Adjustment mode</th></tr>
<tr><td>08</td><td>Zoom, Focus fixed</td></tr>
<tr><td>00</td><td>Normal</td></tr>
</table></td><td>00</td><td>00</td></tr>
<tr><td>AC</td><td>LENS ADJ MODE</td><td>Flange back adjustment mode
<table>
<tr><th>Data</th><th>Adjustment mode</th></tr>
<tr><td>00</td><td>Nomal</td></tr>
<tr><td>01</td><td>Flange back adjustment</td></tr>
</table></td><td>00</td><td>00</td></tr>
<tr><td>AD</td><td>LENS EMRG</td><td>Lens emergency</td><td>00</td><td>00</td></tr>
<tr><td>AE</td><td>NTSC PAL/H DEF</td><td>DELAY bit=0: NTSC, 1: PAL, bit4-7=CCD correction delay</td><td>18</td><td>18</td></tr>
<tr><td>AF</td><td>FT SW</td><td>DDS display mode switchover
<table>
<tr><th>Data</th><th>DDS display mode</th><th>Data</th><th>DDS display mode</th></tr>
<tr><td>00</td><td>Y sampling display</td><td>82</td><td>R ratio display</td></tr>
<tr><td>01</td><td>B–Y display</td><td>83</td><td>B ratio display</td></tr>
<tr><td>02</td><td>R–Y display</td><td rowspan="2">B0</td><td rowspan="2">Focus step display</td></tr>
<tr><td>40</td><td>HALL data display</td></tr>
</table></td><td>00</td><td>00</td></tr>
</table>

Table 7-2 (5).

Address	Name	Function [ ] Indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
B0	CORE OTHER	Core mode data 13 byte	36	36
B1	CORE Y GAIN	0 byte Y gain of core field data	3F	3F
B2	LOW LIGHT CS	Low luminance intensity, color erasure start point	80	80
B3				
B4	E LOWLIGT START 2	Low luminance intensity REF level modulation start setting 2	80	80
B5	E LOWLIGT LEVE	Low luminance intensity REF level modulation start setting	F0	F0
B6	ZOOM DROP 1	F-No drop due to zoom lens (1)	60	60
B7	ZOOM DROP 2	F-No drop due to zoom lens (2)	75	75
B8				
B9				
BA	AWB IN B HYS	AWB indoor B hysteresis amount	04	04
BB	AWB IN R HYS	AWB indoor R hysteresis amount	02	02
BC	AWB KAKE NORM R	Set to 1000H by multiplying with reference value of ADR: 35 (NORM R)	20	20
BD	AWB KAKE NORM B	Set to 1000H by multiplying with reference value of ADR: 36 (NORM B)	40	40
BE	MF STEP CHNGE	MODE2 THR coefficient	06	06
BF	ZOOM SPEED SUPER SLOW		07	07
C0	ZOOM INT SUPER SLOW		1E	1E
C1	AF CONTROL FLAG		0C	0E
C2	AE Y THR	AE variation THR. 1 during low luminance intensity	28	28
C3	AE Y MIN	AE variation THR. 2 during low luminance intensity	20	20
C4	MD2 SPD	Focus speed during MODE2	61	61
C5	AE CHECK	Re-start up AE THR	10	10
C6	LOWCON THR	LOW CON determination THR.1 during MODE2	10	10
C7	LOWCON THR 2	LOW CON determination THR.2 during MODE2	20	20
F0		Input column of the unit ID No., etc. Not related to unit operations.	FF	
F1			FF	
F2			FF	
F3			FF	
F4			FF	
F5			FF	
F6			FF	
F7			FF	
F8			FF	
F9			FF	
FA			FF	
FB			FF	
FC			FF	
FD			FF	
FE			FF	
FF			FF	

Table 7-2 (6).

7-1-6. Page E Address List

Note 1: The data listed in the adjustment data memo column are fixed values.

Note 2: The adjustment data initial values are the values immediately after performing "Page F, Page E Data Initialization" and "Page F, Page E Data Modification". They are different from the values after performing all the adjustments.

Address	Name	Function [ ] Indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
00	a0 V SENSOR GAIN	Pitch adjustment gain } VAP adjustment	80	
01	a1 V SENSOR GAIN	YAW adjustment gain	80	
02	a1 COMPLETE		00	00
03	a0 V LIMIT 1	PITCH initial limiter	FF	FF
04	a0 V LIMIT 2	Loop limiter in PITCH integral	7F	7F
05	a0 V CORE VALUE	PITCH core ring	10	10
06	a0 V K HPF	PITCH HPF feedback coefficient	FF	FF
07	a1 H LIMIT 1	YAW initial limiter	FF	FF
08	a1 H LIMIT 2	Loop limiter in YAW integral	7F	7F
09	a1 H CORE VALUE	YAW core ring	10	10
0A	a1 H K HPF	YAW HPF feedback coefficient	FF	FF
0B	a0 K TABLE	PITCH and YAW integral feedback coefficient table	04	04
0C	a0 ADLP CENTER PITCH	Vertical angle sensor (PITCH) input	00	00
0D	a0 ADLP CENTER PITCH+1	Vertical angle sensor (PITCH) input	08	08
0E	a0 ADLP CENTER YAW	Vertical angle sensor (YAW) input	00	00
0F	a0 ADLP CENTER YAW+1	Vertical angle sensor (YAW) input	08	08
10	a0 V REF CENTER	PITCH PWM center value	00	00
11	a0 V REF CENTER+1	PITCH PWM center value	08	08
12	a1 H REF CENTER	YAW PWM center value	00	00
13	a1 H REF CENTER+1	YAW PWM center value	08	08

Table 7-3.

7-1-7. Page, 6 Page 1 Address List

The camera adjustment mode can be set by performing the following data settings at page: 6 or page: 1. (These page data can be set temporary, but when the main power (6.3V) is turned off, the original value (normal value) will be returned. Therefore, these adjustment modes can be released very simply by turning the main power off.)

(Example) The camera adjustment mode (window OFF) is set by setting data: 01 to page: 6, address: 00. The F page write protect will also be released.

1. Page 6

Address	Adjustment Mode	Data	Function
00	Camera adjustment mode	01	Camera adjustment mode (window OFF), F page write protect released
		10	Normal
		11	Camera adjustment mode (window ON), F page write protect released
01	Camera adjustment switch **Note:** To set this address adjustment mode, it is necessary to press the PAUSE button of the adjusting remote control unit after setting the data.	00	Normal
		01	IRIS OPEN, AGC HOLD
		03	IRIS CLOSE1, AGC HOLD
		05	IRIS CLOSE2, AGC MIN
		07	IRIS CLOSE3, AGC MAX
		09	ND0.5 SHUTTER (PAL=1/160, NTSC=1/190)
		0B	ND0.8 SHUTTER (PAL=1/320, NTSC=1/380)
		0D	AWB PRESET1: 3200K PRESET DATA take in
		0F	WB 3200K PRESET: Indoor white balance mode
		11	AWB PRESET2: 3200K PRESET DATA take in
		13	ZOOM HUNTING1 ZOOM SPDSLOW
		15	ZOOM HUNTING2 ZOOM SPDFAST
		1D	EEPROM PRE WRITE: Page F, Page E initial data write
05	Shutter mode	00 to 03	1/60
		04	1/100
06	FOCUS limiter ON/OFF	00	FOCUS limiter ON
		01	FOCUS limiter OFF
07	ZOOM limiter ON/OFF	00	ZOOM limiter ON
		01	ZOOM limiter OFF
08	ZOOM speed SLOW/FAST	00	Normal
		01	ZOOM speed SLOW
		02	ZOOM speed FAST
		03	ZOOM speed SUPER SLOW
09 ★	COMPLEATED FLAG	00	Camera adjustment not completed
		01	Camera adjustment completed
11 ★	ROM VERSION	01	Camera micro processor ver1
		02	Camera micro processor ver2
		03	Camera micro processor ver3
0C ★	LENS INITIAL END	00	During the initial operation of the lens
		01	Lens initial operation completed
0D ★	PHOTO INTERRUPTER MONITOR	00	inf side
		01	near side

Addresses with ★ are exclusively for reading.

Table 7-4.

2. Page 1

Address	Adjustment Mode	Data	Function
E6	VH address L		Title horizontal/vertical position (L)
E7	VH address H		Title horizontal/vertical position (H)

Table 7-5.

7-1-8. Adjustment Connector

Most of the measuring points for the camera section adjustment are concentrated on CN701 of the VC-103 board. Connect the oscilloscope etc. via the measuring pin jig (J-6082-139-A). The following table lists the terminal numbers and the signal names of CN701.

Terminal Number	Signal Name	Terminal Number	Signal Name
1	D5V	2	NC
3	ZOOM SW	4	CAM SI
5	CS EEPROM	6	CAM SO
7	$\overline{\text{CS OPD}}$	8	$\overline{\text{CAM SCK}}$
9	$\overline{\text{CS CORE}}$	10	GND
11	IRIS OUT	12	NC
13	V SUB CHK	14	CAM C
15	PG CONT	16	GND
17	4FSC	18	CAM Y

Table 7-6.

7-1-9. Data Processing

The calculation of the DDS display and the adjusting remote control unit display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Table 7-7. indicates the hexadecimal notation-the decimal notation calculation table.

Hexadecimal notation-Decimal notation

②

The lower digits of the hexadecimal notation The upper digits of the hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	80	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
① → B (b)	176	177	178	179	180	180	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: ( ) indicate the adjusting remote control unit display.

(Example) In the case that the DDS display and the adjusting remote control unit display are BD (b d).
As the upper digit of the hexadecimal notation is B (b), and the lower digit is D (d), the intersection "189" of the ① and ② in the above table is the decimal notation to be calculated.

Table 7-7.

7-2. CAMERA SYSTEM ADJUSTMENT

1. Power Supply Voltage Check (DD-38 board)

Subject	Option
Measuring instrument	Digital voltmeter
D5V check	
Measurement point	Pins ⑨ and ⑩ of CN202
Specified value	4.85 ± 0.03 Vdc
M5V (1) check	
Measurement point	Pins ⑭ and ⑮ of CN202
Specified value	4.98 ± 0.05 Vdc
CAM 5V check	
Measurement point	Pins ①, ③ and ⑥ of CN202
Specified value	4.90 ± 0.05 Vdc
CAM 15V check	
Measurement point	Pin ② of CN202
Specified value	15.0 ± 15 Vdc
CAM –9V check	
Measurement point	Pin ④ of CN202
Specified value	–8.40 ± 0.40 Vdc

Checking method:

1) Check that each power supply voltage satisfies the specified value.
   If not, refer to "VIDEO CIRCUIT, POWER SUPPLY ADJUSTMENTS".

2. Page F, Page E Data Initialization

Note: It is necessary to perform all adjustments of the camera section from the beginning again if the data of page F, page E has been initialized.

Initializing method:

1) Release the protect.
   Page: 6, address: 00, data: 01.
2) Check that the data of page: 6, address: 09 is 00.
   (Display indicating that page F, page E data can be initialized)
3) Set data: 1D to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Page F, page E data initialization execution.
   The data of all addresses of page F, page E will be initialized.)
4) Check that the data of page: 6, address: 09 is 01.
   (Displays that the initialization of page F, page E data has been completed)
5) Set data: 00 to page: 6, address: 01. and press the PAUSE button of the adjusting remote control unit.
   (Releases the page F, page E data initialization mode)
6) After performing "Page F, page E data modification", perform all the adjustments of the camera section (page F and page E).

3. Page F, Page E Data Modification

The data (initial data) that is automatically written on page F, page E after the initialization of the page F, page E data will differ according to some camera micro processor versions. Change the data by manual input, and arrange it.

Note: When changing the data, to write the data to the non-volatile memory, press the PAUSE button of the adjusting remote control unit every time the new data is set.

Page F

Address	Data
00 (ID)	31
08 (HALL GAIN)	75
09 (HALL OFFSET)	79
0A (E LOW LIGHT START)	20
0F (CORE APCN4)	B5
11 (CORE EJECT)	A0
12 (CORE MAT R)	26
13 (RED MAT B)	6D
15 (CORE CHROMA DLY)	08
17 (CORE VHAPCN)	15
1C (CS/APC CUT)	24
41 (AWB BOTTOM SLP R)	30
42 (AWB BOTTOM SLP B)	58
43 (AWB MIDDLE SLP R)	62
44 (AWB MIDDLE SLP B)	47
45 (AWB TOP SLP R)	6C
46 (AWB TOP SLP B)	1A
49 (AWB BOTTOM UP)	8C
4A (AWB BOTTOM DWN)	6B
4B (AWB MIDDLE UP)	B8
4C (AWB MIDDLE DWN)	9F
4D (AWB TOP UP)	80
4E (AWB TOP DWN)	66
51 (AWB R TOP LMT)	6C
58 (AWB B DWN LMT)	20
5B (AWB M DIVID)	3C
68 (AE FUNCTION)	40
8A (STEP ZERO)	65
8B (STEP ZERO SPAN)	BE
8D (ZOOM SPDSUPER)	59
8E (ZM INIT SLOW)	59
8F (ZM INIT FAST)	59
A4 (LIMITREST WIDE)	14
A5 (LIMITREST TELE)	0F
B0 (CORE OTHER)	36
B2 (LOW LIGH CS)	FF
B4 (E LOWLIGHT START 2)	90
BF (ZOOM SPEED SUPER SLOW)	07
C0 (ZOOM INT SUPER SLOW)	1E

Page E

Address	Data
05 (a0 V CORE VALUE)	10
09 (al H CORE VALUE)	10

[Distinguishing the Camera Micro Processor (IC702) Versions]

Each version can be distinguished by looking at the part name of the camera micro processor or the data of page: 6, address: 11.

Version	Part Name	Page: 6 Address: 11
Ver.1	CXP80624-267Q	01
Ver.2	CXP80624-273Q	02
Ver.3	CXP80624-275Q	03

4. 28 MHz Original Oscillation Adjustment (VC-103 board)

Subject	Not required
Measurement Point	Pin ⑰ of CN701 (4FSC)
Measuring Instrument	Frequency counter
Adjusting Element	CT801
Specified Value	14318181 ± 71 Hz

Adjusting method:

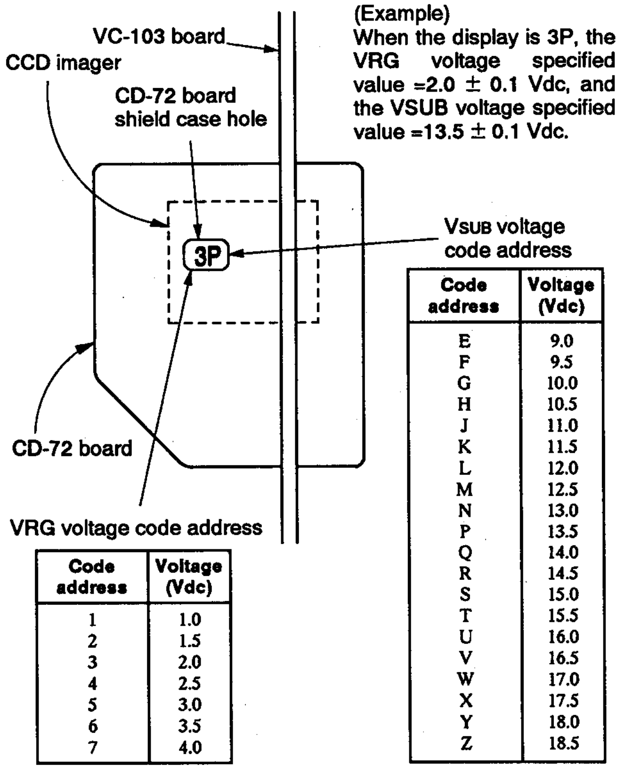
1) Use CT801 to adjust the oscillation frequency to 14318181 ± 71 Hz.

5. V SUB Adjustment (VC-103 board)

Subject	Not required
Measurement Point	Pin ⑬ of CN701 (V SUB CHK)
Measuring Instrument	Digital voltmeter
Adjustment Page	F
Adjustment Address	04 (V SUB)
Specified Value	(Imager display voltage) ± 0.1 Vdc

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 04, and adjust the voltage of pin ⑬ of CN701 (imager display voltage) to ± 0.1 Vdc.
3) Press the PAUSE button of the adjusting remote control unit.



(Example)
When the display is 3P, the VRG voltage specified value =2.0 ± 0.1 Vdc, and the VSUB voltage specified value =13.5 ± 0.1 Vdc.

VRG voltage code address

Code address	Voltage (Vdc)
1	1.0
2	1.5
3	2.0
4	2.5
5	3.0
6	3.5
7	4.0

Vsub voltage code address

Code address	Voltage (Vdc)
E	9.0
F	9.5
G	10.0
H	10.5
J	11.0
K	11.5
L	12.0
M	12.5
N	13.0
P	13.5
Q	14.0
R	14.5
S	15.0
T	15.5
U	16.0
V	16.5
W	17.0
X	17.5
Y	18.0
Z	18.5

Fig. 7-7.

6. VRG Adjustment (VC-103 board)

Subject	Not required
Measurement Point	Pin ⑮ of CN701 (PG CONT)
Measuring Instrument	Digital voltmeter
Adjustment Page	F
Adjustment Address	05 (VRG)
Specified Value	(Imager display voltage) ± 0.1 Vdc

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 05, and adjust the voltage of pin ⑮ of CN701 (imager display voltage) to ± 0.1 Vdc.
3) Press the PAUSE button of the adjusting remote control unit.

7. CCD Imager Correction Data Write

Subject	Not required
Adjustment Page	F
Adjustment	1D to 2C (CCD-DEFECT)

Perform CCD imager correction data write in the following cases.

1. When the CCD imager has been replaced
2. The ocassion of exchanging a camera micro processor or EEPROM (IC701).
3. When the page F data has been initialized

In the case of 1, as the correction data is not required for the CCD imager for repair, adjust all data of addresses 1D to 2C to "00".

In the case of 2 and 3, write the correction data attached to the shield case of DD-38 board to addresses 1D to 2C.

If the correction data are not attached, adjust all data of addresses 1D to 2C to "00".

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Write the correction data to page: F, addresses: 1D to 2C.
   Note: To perform write to the non-volatile memory, press the PAUSE button of the adjusting remote control unit every time the new data is set.

Processing after completing adjustments

1) If the CCD imager has been replaced, remove the old correction data label attached on DD-38 board.

8. VAP Pre-check

Subject	Color bar chart
Measuring Point	Adjusting remote control unit display Page: B, address: 0B ····PH Page: B, address: 0D ····YH
Measuring Instrument	
Specified Value	PHF ≦ 60 YHF ≦ 60 PHO ≧ A0 YHO ≧ A0

Checking method:

1) Adjust the position of the unit so that the color bar chart comes to the center of the monitor (top, bottom, left, and right).
2) Release the protect.
   Page: 6, address: 00, data: 01
3) Set data: 01 to page: B, address: 05.
   (a1 SENS VAP MODE 4 setting)
4) Set data: FF to page: E, address: 10.
   Set data: 0F to page: E, address: 11.
   (Check that the color bar chart shifts downwards on the monitor TV.)
5) After 1 second, check that the data (PHF) of page: B, address: 0B is within the "00" to "60" range.
6) Set data: 00 to page: E, address: 10.
   Set data: 08 to page: E, address: 11.
   (Check that the color bar chart shifted downwards moves back to the center of the monitor TV.)
   Set data: FF to page: E, address: 12.
   Set data: OF to page: E, address: 13.
   (Check that the color bar chart shifts to the right.)
7) After 1 second, check that the data (YHF) of page: B, address: 0D is within the "00" to "60" range.
8) Set data: 00 to page: E, address: 12.
   Set data: 00 to page: E, address: 13.
   (Check that the color bar chart shifts to the left via the center.)
9) After 1 second, check that the data (YHO) of page: B, address: 0D is within the "A0" to "FF" range.
10) Set data: 08 to page: E, address: 13.
    (Check that the color bar chart moves back to the center.)
    Set data: 00 to page: E, address: 11.
    Set data: 00 to page: E, address: 10.
    (Check that the color bar chart shifts upwards.)
11) After 1 second, check that the data (PHO) of page: B, address: 0B is within the "A0" to "FF" range.
12) Set data: 08 to page: E, address: 11.
    (Check that the color bar chart moves back to the center.)
13) Set data: 00 to page: B, address: 05.
    (Release of a1 SENS VAP MODE 4)

9. HALL Adjustment

Subject	Not required
Measurement Point	DDS display of EVF or monitor TV
Measuring Instrument	
Adjustment Page	F
Adjustment Address	08 (HALL GAIN) 09 (HALL OFFSET)
Specified Value	31 to 35 during IRIS OPEN B1 to B5 during IRIS CLOSE

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 40 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (HALL output display mode setting)
3) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE mode setting)
4) Set data: 40 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
5) Read the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or the monitor TV display), and take it as W_2.
6) Set data: 30 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
7) Read the DDS display data, and take it as W_1.
8) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS OPEN mode setting)
9) Read the DDS display data, and take it as K_1.
10) Set data: 40 to page: F, address: 08, and press the PAUSE button.
11) Read the DDS display data, and take it as K_2.
12) Convert W_1, W_2, K_1, K_2 to decimal notation, and obtain W_1', W_2', K_1', K_2'. (Refer to Table 7-7. "Hexadecimal notation-decimal notation conversion table".)
13) Calculate X_1' using the following equations (decimal notation calculation).
    $A' = W_2' + K_1' - W_1' - K_2'$ ……………………Equation 1
    $B' = W_1' - K_1'$ ……………………………………Equation 2
    $X_1' = \frac{2048 + (48 \times A') - (16 \times B')}{A'}$ ……………Equation 3
14) Convert X_1' to hexadecimal notation, and obtain X_1.
    (Round off to one decimal place)
15) Set data: X_1 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
16) Change the data of page: F, address: 09, and adjust the DDS display data to "33".
17) Press the PAUSE button of the adjusting remote control unit.
18) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
    (IRIS CLOSE mode setting)
19) Read the DDS display data, and take it as W_0. If W_0 lies within the "B1" to "B5" range, perform "Processing after completing adjustments". If it lies outside the range, perform the following adjustments.
20) Convert W_0 to hexadecimal notation, and obtain W_0'.
21) Calculate X_2' using the following equations (decimal notation calculation).
    $C' = W_0' - B' - 51$ ……………………………Equation 4
    $X_2' = \frac{(128 - B') \times (X_1' - 48) + 48 \times C'}{C'}$ …………Equation 5
    (X_1' and B' are values obtained from equations 2 and3)
22) Convert X_2' to hexadecimal notation and obtain X_2.
    (Round off to one decimal place)
23) Set data X_2 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
24) Change the data of page: F, address: 09, and adjust the DDS display data to "B3".
25) Press the PAUSE button of the adjusting remote control unit.
26) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
    (IRIS OPEN mode setting)
27) Check that the DDS display data lies within the "31" to "35" range.

Processing after Completing Adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS NORMAL mode setting)

10. Flange Back Adjustment

Subject	Chart for flange back adjustment (1972 ± 5 mm from the front side of the lens Luminance: 350 ± 50 lux)
Measurement Point	Check the operations on the TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	8A (STEP ZERO), 86 (WIDE LIMIT), 87 (WIDE LIMIT H), 88 (TELE LIMIT), 89 (TELE LIMIT H)

Adjusting method:

1) Check that the movement correction switch is at "Off".
2) Check that the data of address: 86 to address: 8A of page: F are set to the initial values.
3) Check that the flange back adjustment chart center and the exposure display center coincide at both zoom lens TELE end and WIDE end.
4) Release the protect.
   Page: 6, address: 00, data: 01
5) Check that the data of page: 6, address: 09 is 00.
   (Flange back adjustment possible display)
6) Set data: 01 to page: F, address: AC.
   (This causes automatic adjustment to be performed. Adjustments are performed at the zoom lens TELE end first, and then at the WIDE end. The adjustment data is automatically input to page: F, addresses: 86 to 8A.)
7) Check that the data of page: 6, address: 09 is 01.
   (Display indicating flange back adjustment completion)

Processing after completing adjustments

1) Set data: 00 to page: F, address: AC.
2) Turn off the main power supply (6.3V).

11. Flange Back Check

Subject	Siemens star (1m from the front of the lens)
Measurement Point	DDS display of EVF or monitor TV
Measuring Instrument	
Specified Value	$D_2=D_1 \pm 3$

Checking method:

1) Set data: 11 to page: 6, address: 00.
   (Camera adjustment (window ON) mode)
2) Set data: B0 to page: F, address: AF.
   (Focus step display mode)
3) Place the Siemens star 1m from the front of the lens.
4) Adjust the "Auto-lock" switch to "Off".
5) Adjust the "Brightness" to "Manual". Rotate the "Brightness" to the "+" side, and adjust the IRIS to "Open".
6) Adjust the luminance intensity or shutter speed for the Siemens star so that the optimum image can be obtained.
7) Expose the siemens star at the zoom TELE end.
8) Adjust the "Focus" to "Manual". Rotate the focus ring, and adjust the focus.
9) Adjust to the zoom WIDE end.
10) Read the focus step value (4 digits) displayed on the TV monitor, and take it as D_1.
11) Rotate the focus ring, and adjust the focus.
    Read the focus step value, and take it as D_2.
12) Check that $D_2=D_1 \pm 3$.

Processing after Completing Check

1) Set data: 00 to page: F, address: AF.
   Press the PAUSE button of the adjusting remote control unit.

12. SYNC Level Adjustment (VC-103 board)

Subject	Not required
Measurement Point	Pin ⑱ of CN701 (CAM Y)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	06 (VREF-Y)
Specified Value	A=140 ± 5 mV

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 05 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE mode setting)
3) Change the data of page: F, address: 06, and adjust so that the SYNC level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of IRIS CLOSE mode)

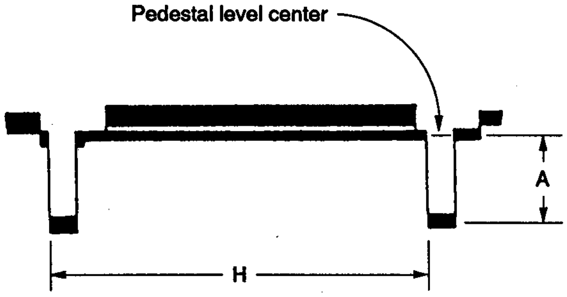


Fig. 7-8.

13. BURST Level Adjustment (VC-103 board)

Subject	Not required
Measurement Point	Pin ⑭ of CN701 (CAM C)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	07 (VREF-C)
Specified Value	A=140 ± 5 mVp-p

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 05 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE mode setting)
3) Change the data of page: F, address: 07, and adjust so that the burst level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of IRIS CLOSE mode)

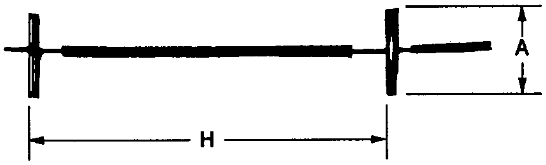


Fig. 7-9.

14. A/D Offset Adjustment

Subject	Not required
Measurement Point	DDS display on the EVF or the TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	0C (AD REF)
Specified Value	46 to 47

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 05 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE AGC MIN mode setting)
3) Set data: 00 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (Y sampling output mode setting)
4) Set data: 35 to page: 1, address: E6.
   (Setting 1 of the sampling position)
5) Set data: 6D to page: 1, address: E7.
   (Setting 2 of the sampling position)
6) Change the data of page: F, address: 0C, and adjust the average value of the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or the TV monitor display) to 46 to 47.
   (Set the data of address 0C to the maximum value satisfying the specification.)
7) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 1, address: E6.
   Set data: 00 to page: 1, address: E7.
   (Release of sampling position setting)
2) Set data: 00 to page: 6, address: 01.
   Press the PAUSE button of the adjusting remote control unit. (Release of IRIS CLOSE mode)

15. Carrier Balance Adjustment

Subject	Not required
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	03 (CS SL)
Specified Value	The center of the black luminance point should lie within the 1 ϕ circle whose center is the principle point.

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01.
2) Set data: 07 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE, AGC MAX mode setting)
3) Change the data of page: F, address: 03, and adjust so that the center of the black luminance point coincides with the principle point.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS NORMAL mode setting)

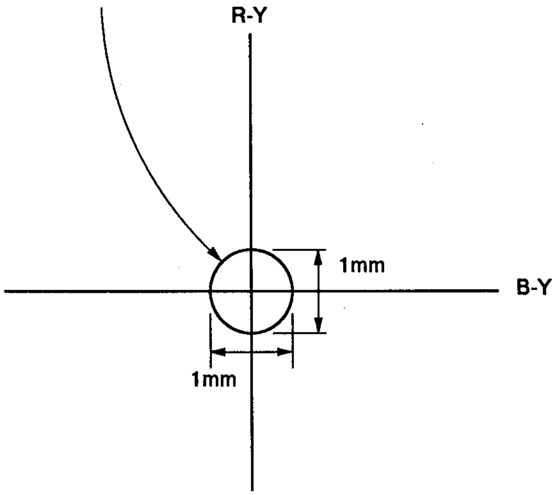

The center of the black luminance point should be within this circle.

Fig. 7-10.

16. Picture Frame Setting

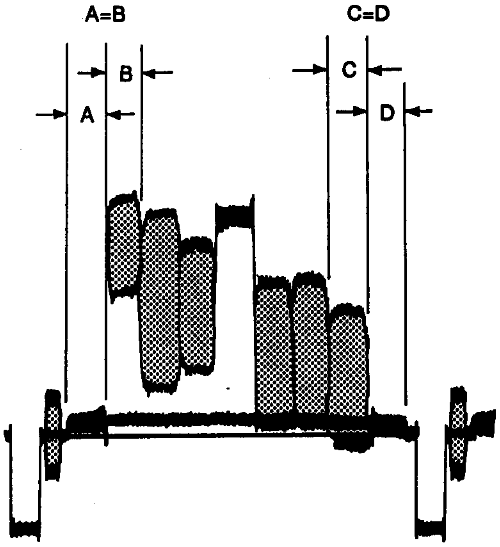
Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Oscilloscope and TV monitor.
Specified Value	A=B, C=D, t=0 ± 0.1 msec

Setting method:

1) Turn the auto focus off.
2) Adjust the focus using the focus knob.
3) Adjust the zoom and the camera direction, and set to the specified position.
4) Mark the position of the picture frame on the monitor display, and adjust the picture frame to this position in following adjustments using "color bar chart standard picture frame" and "white pattern standard picture frame".

Check on the oscilloscope

1. H period



2. V period

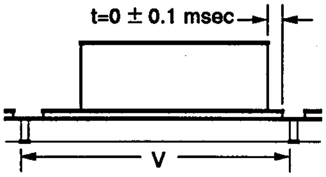


Fig. 7-11.

Check on the TV monitor (under-scan mode)

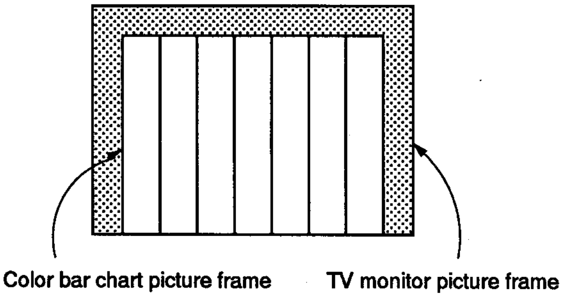


Fig. 7-12.

17. IRIS Level Adjustment (VC-103 board)

Subject	Color bar standard picture frame
Measurement Point	Pin ⑪ of CN701 (IRIS OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	63 (AGC MIN)
Specified Value	A=200 ± 5 mV

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 63, and adjust so that the IRIS OUT signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

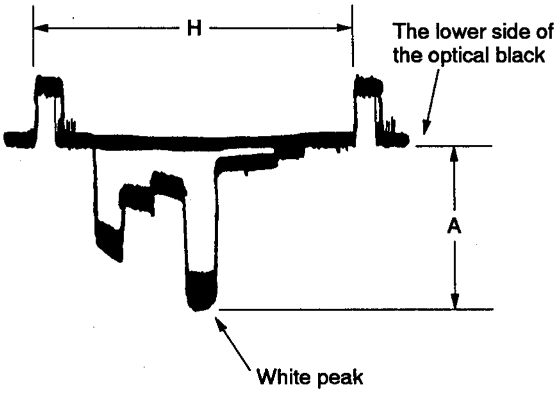


Fig. 7-13.

18. MAX GAIN Adjustment (VC-103 board)

Subject	Color bar standard picture frame
Filter	ND filter 1.0 (2 sheets) and 0.4 (1 sheet), 0.1 (1 sheet)
Measurement Point	Pin ⑱ of CN701 (CAM Y)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	64 (AE MIN L)
Specified Value	A=150 ± 5 mV

Adjusting method:

1) Place the ND filter 2.5 (1.0+1.0+0.4+0.1) on the lens.
2) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 64, and adjust so that the CAM Y signal level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

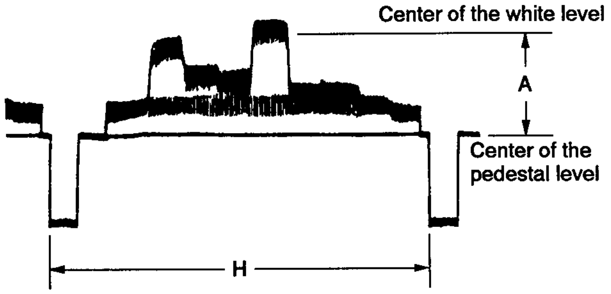


Fig. 7-14.

19. IRIS IN/OUT Adjustment

Subject	White pattern standard picture frame
Measurement Point	DDS display of the EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	39 (AWB IRIS IN) 3A (AWB IRIS OUT)

Adjusting method:

1) Set data: 11 to page: 6, address: 00.
   (Camera adjustment mode (window ON) setting)
2) Set data: 40 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (HALL data display)
3) Set data: 0B to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (ND0.8 shutter mode setting)
4) Read the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or the TV monitor), and take it as D39.
5) Set data: D39 to page: F, address: 39, and press the PAUSE button of the adjusting remote control unit.
6) Set data: 09 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (ND0.5 shutter mode setting)
7) Read the DDS display data and take it as D3A.
8) Set data: D3A to page: F, address: 3A, and press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of the ND0.5 shutter mode)

20. Pre-white Balance Adjustment

Subject	White pattern standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	33 (R CONT REF), 34 (B CONT REF)
Specified Value	The center of the white luminance point should lie within the circle with a diameter of 1 mm whose center is the principle point

Adjusting method:

1) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (WB 3200K preset mode setting)
2) Set data: 11 to page: 6, address: 00.
   (Camera adjustment mode (window ON) setting)
3) Change the data of addresses:33 and 34 of page: F alternately, and coincide the white luminance point to the principle point.
   Note: Be sure to press the PAUSE button of the adjusting remote control unit before changing the addresses.
   If not, the new data will not written to the memory.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of the preset mode)
2) Set data: 10 to page: 6, address: 00.
   (Protect mode setting)

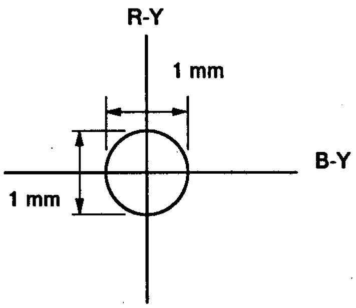


Fig. 7-15.

21. Color Reproduction Adjustment

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	18 (CORE B–Y GAIN), 19 (CORE R–Y GAIN), 1A (CORE R–Y HUE), 1B (CORE B–Y HUE)
Specified Value	All color luminance points should settle within each color reproduction frame.

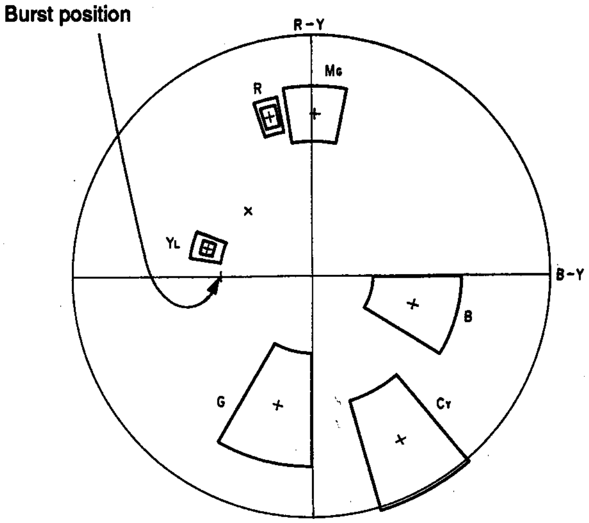


Fig. 7-16.

Adjusting method:

1) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Indoor white balance mode setting)
2) Set data: 01 to page: 6, address: 00.
   (Camera adjustment mode (window OFF) setting).
3) Adjust the GAIN and PHASE of the vectorscope, and adjust the burst luminance point to the burst position of the color reproduction frame.
4) Change the data of addresses 18 to 1B of page: F, and settle each color luminance point in each color reproduction frame.
   Note: Be sure to press the PAUSE button of the adjusting remote control unit before changing the addresses.
   If not, the new data will not be written to the memory.
5) Press the PAUSE button of the adjusting remote control unit.

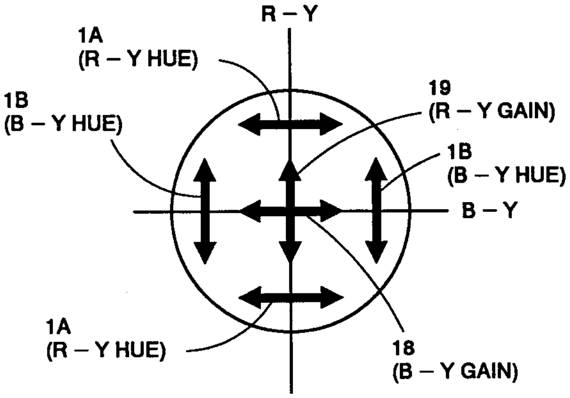


Fig. 7-17. Direction of the Movements of the Adjustment Address and Luminance Point

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of the adjustment mode)
2) Set data: 10 to page: 6, address: 00.
   (Protect mode setting)

22. Auto White Balance Preset Adjustment

Subject	White pattern standard picture frame
Adjustment Page	F
Adjustment Address	2D (R REF L), 2E (R REF H), 2F (G REF L), 3O (G REF H), 31 (B REF L), 32 (B REF H)

Adjusting method:

1) Turn the power of the unit OFF/ON.
2) Check that the data of page: 6, address: 09 is 00.
   (Auto white balance preset adjustment possible display)
3) Set data: 11 to page: 6, address: 00.
   (Camera adjustment mode (window ON) setting)
5) Set data: 11 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (3200K preset data take in preparation mode)
6) Set data: 0D to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (When the 3200K preset data is taken in, the data will be automatically input to addresses 2D to 32 of page F.)
7) Check that the data of page: 6, address: 09 is 01.
   (Auto white balance preset adjustment completion display)
8) Perform "Auto White Balance Adjustment".

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of the auto white balance preset mode)
2) Set data: 10 to page: 6, address: 00.
   (Release of camera adjustment mode)

23. Auto White Balance Adjustment

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction
Measurement Point	Check with the DDS display on the EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	35 (AWB NORM R) 36 (AWB NORM B)
Specified Value	R ratio 2A80 ± 40 B ratio 5B80 ± 40

Note: Perform this adjustment after "Auto White Balance Preset Adjustment".

Adjusting method:

1) Set data: 11 to page: 6, address: 00.
   (Camera adjustment mode (window ON) setting)
2) Set data: D0 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
   (Auto white balance adjustment mode setting)
3) Set data: 82 to page: F, address: AF.
   (R ratio display mode setting)
4) Change the data of page: F, address: 35, and adjust the average value of the DDS display data (the display data at the bottom right of the EVF or the TV monitor) to 2A80 ± 40.
5) Press the PAUSE button of the adjusting remote control unit.
6) Set data: 83 to page: F, address: AF.
   (B ratio display mode setting)
7) Change the data of page: F, address: 36, and adjust the average value of the DDS display data to 5B80 ± 40.
8) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
   (Release of the white balance adjustment mode)
2) Set data: 10 to page: 6, address: 00.
   (Release of camera adjustment mode)

24. White Balance Check

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction ND filter 1.0 and 0.3
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Specified Value	Fig. 4-18. A to C

Checking method:

1) Check that the lens is not covered with either filter.
2) Set data: 11 to page: 6, address: 00.
   (Camera adjustment mode (window ON) setting)
3) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Indoor white balance mode setting)
4) Check that the center of the white luminance point is within the circle shown in Fig. 7-18.A.
   (Indoor white balance check)
5) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Auto white balance mode setting)
6) Set data: 01 to page: F, address: 5C, and press the PAUSE button of the adjusting remote control unit.
   (Auto white balance high speed tracking mode setting)
7) Check that the center of the white luminance point is within the circle shown in Fig. 7-18. A.
8) Place the C14 filter on the lens.
9) Check that the center of the white luminance point settles in the circle shown in Fig. 7-18. B.
   (Auto white balance outdoor mode check)
10) Remove the C14 filter, and place the ND filter 1.3 (1.0+0.3) on the lens.
11) Check that the center of the white luminance point settles in the circle shown in Fig. 7-18. C.
    (Auto white balance indoor mode check)

Processing after completing adjustments

1) Set data: 10 to page: F, address: 5C, and press the PAUSE button of the adjusting remote control unit.
   (Release of the auto white balance fast tracking mode)
2) Set data: 10 to page: 6, address: 00.
   (Release of camera adjustment mode)

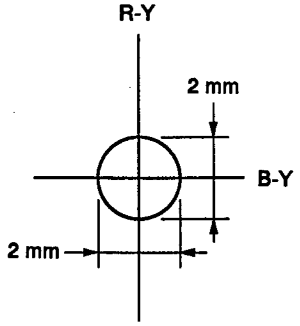


Fig. 7-18. A

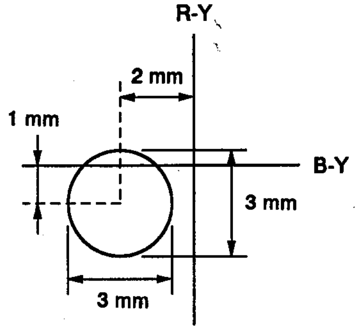


Fig. 7-18. B

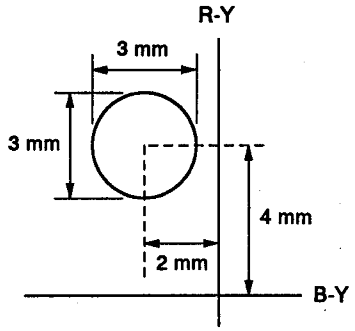


Fig. 7-18. C

25. Linear Matrix Adjustment

Subject	Color bar standard picture frame
Filter	Filter C14 for color temperature correction
Measurement Point	DDS display on the EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	3D (DMAT HUE) 3E (DMAT GAIN)

Note: Check that position of the color bar chart picture frame that was set in "16. Picture Frame Setting" is maintained, before beginning adjustments.

Adjusting method:

1) Remove the filter C14 for color temperature correction.
2) Release the protect.
   Page: 6, address: 00, data: 01
3) Color bar data sampling mode setting
   1. Check that the data of page: 6, address: 01 is 00.
   2. Set data: F1 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
   3. Set data: 2E to page: F, address: 14, and press the PAUSE button of the adjusting remote control unit.
   (Check that the colors on the monitor display at the color modulation stop mode setting have disappeared)
4) Specifying the Yellow position
   1. Set data: C9 to page: 1, address: E6.
   2. Set data: B6 to page: 1, address: E7.
5) Set data: 02 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (R–Y data display mode setting)
6) Read the average value of the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or TV monitor), and take it as Y_1.
7) Specifying the Red position
   1. Set data: 59 to page: 1, address: E6.
   2. Set data: 6D to page: 1, address: E7.
8) Read the average value of the DDS display data, and take it as R_1.
   Note: DDS is displayed only when the adjusting remote control unit is displaying page F or page E.
9) Place the filter C14 for color temperature correction on the lens. (Ensure that the picture frame of the chart does not shift at this time.)
10) Specifying the yellow position.
    1. Set data: C9 to page: 1, address: E6.
    2. Set data: 8F to page: 1, address: E7.
11) Read the average value of the DDS display data, and take it as Y_2.
12) Convert Y_1, R_1, Y_2 to decimal notation to obtain Y_1', R_1' and Y_2'.
    (Refer to Table 7-7. "Hexadecimal notation-decimal notation conversion table")
13) Calculate X_1' from the following equation (decimal notation calculation).
    $X_1'=Y_2'-Y_1'$
14) Calculate D_{3D} from the following table.
    (D_{3D} is hexadecimal notation)

X_1' value	D_{3D}
$-1 \leqq X_1' \leqq 1$	F0
$X_1'>1$	F1
$X_1'<-1$	FF

15) Set data: D_{3D} to page: F, address: 3D, and press the PAUSE button of the adjusting remote control unit.
16) Specifying the Red position
    1. Set data: D9 to page: 1, address: E6.
    2. Set data: F7 to page: 1, address: E7.
17) Read the average value of the DDS display data, and take it as R_2.
18) Convert R_2 to decimal notation to obtain R_2'.
19) Calculate X_2' from the following equation (decimal notation calculation).
    $X_2'=R_2'-R_1'$
20) Calculate D_{3E} from the following table.

X_2' value	D_{3E}
$X_2' \geqq 0$	00
$0>X_2' \geqq -1$	01
$-1>X_2'$	02

21) Set data: D_{3E} to page: F, address: 3E, and press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
   (Release of the sampling mode)
2) Set data: 2C to page: F, address: 14, and press the PAUSE button of the adjusting remote control unit.
   (Color modulation ON mode setting)
3) Set data: 00 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (Release of the R–Y data display mode)
4) Turn the main power supply (6.3V) off.

26. VIDEO OUT Level Check

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal (Terminated at 75 Ω)
Measuring Instrument	Oscilloscope
Specified Value	Y level=680 ± 50 mV SYNC level=285 ± 20 mV

Checking method:

1) Check that the Y level and SYNC level satisfy the specified values.

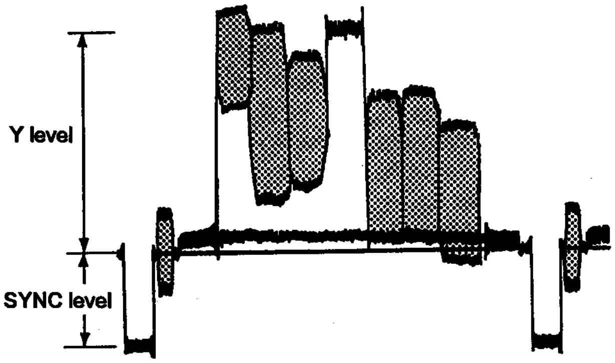


Fig. 7-19.

27. Title Color Reproduction Adjustment

Subject	All black (Cover the lens with a black cap)
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	D
Adjustment Address	14 (BLU R–Y), 15 (BLU B–Y), 16 (GRN R–Y), 17 (GRN B–Y), 18 (CYN R–Y), 19 (CYN B–Y), 1A (RED R–Y), 1B (RED B–Y), 1C (VIO R–Y), 1D (VIO B–Y), 1E (YEL R–Y), 1F (YEL B–Y)
Specified Value	Each title color luminance point should settle within each color reproduction frame.

Note: For details on the page D address list, refer to "Service mode" in "Video Section Adjustments".

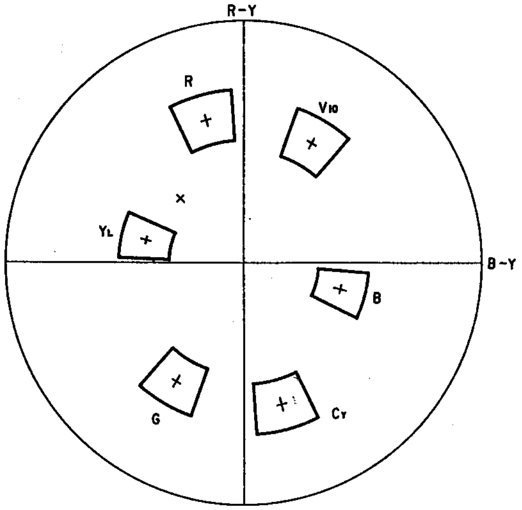


Fig. 7-20.

Adjusting method:

1) Release the protect of page D.
   Page: 1, address: 00, data: 01
2) Press the superimpose button "memory".
3) Adjust the HOLD switch of the adjusting remote control unit to "NORMAL" (left).
4) Use the "color/mode" button to change the title color to "blue".
5) Adjust the HOLD switch of the adjusting remote control unit to "SERVICE" (right).
6) Change the data of addresses 14 and 15 of page D, and and settle the blue luminance points within the blue (B) color reproduction frame.
   Note: Be sure to press the PAUSE button of the adjusting remote control unit before changing the address.
   If not, the new data will not be written in the memory.
7) Press the PAUSE button of the adjusting remote control unit.
8) Adjust for green (addresses 16, 17), cyan (addresses 18, 19), red (addresses 1A, 1B), violet (addresses 1C, 1D) and yellow (addresses 1E, 1F) in the same way.
9) Remove the adjusting remote control unit, change the titler color, and check that each title color luminance point is within the color reproduction frame.

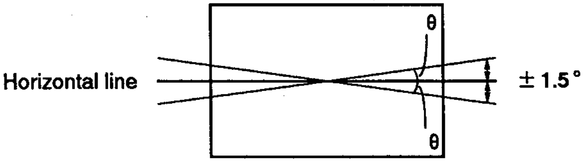
7-3. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENTS

7-3-1. Horizontal Slant Adjustment

Model	Playback
Signal	Alignment tape: For checking Hi8 mode operations (WR5-8NSE) Monoscope section
Specified Value	Refer to Fig. 7-21.

Adjusting method:

1) Adjust RV504 (BRIGHT) so that the CRT can be seen easily and clearly.
2) Loosen the DY (deflection yoke) tightening nut.
3) Rotate DY, and adjust the image so that it is horizontal.
4) Tighten the DY tightening nut.
   (Do not tighten it too tightly.)



Specified value: The image should be within ± 1.5° of the horizontal line.

Fig. 7-21.

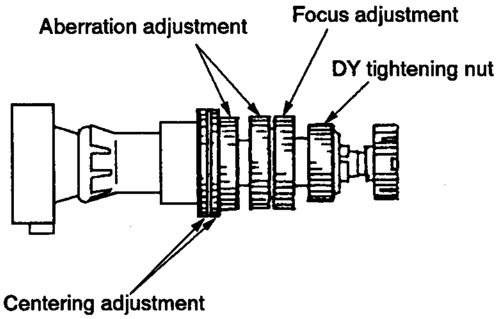


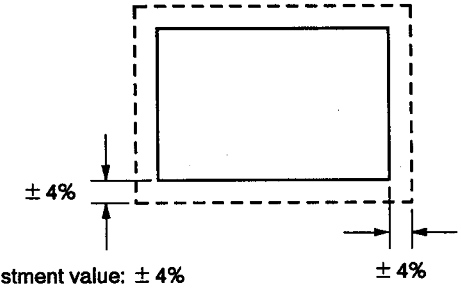
Fig. 7-22.

7-3-2. Centering Adjustment

Model	Playback
Signal	Alignment tape: For checking Hi8 mode operations (WR5-8NSE) Monoscope section
Specified Value	Refer to Fig. 7-23.

Adjusting method:

1) Use the centering adjustment ring and adjust so that the left, right, top, and bottom sides of the display are uniform. (Refer to Fig. 7-22.)
   Note: As the centering position changes due to earth magnetism, rotate it 360° in the horizontal direction, and adjust with the center section of the modifying position.



Adjustment value: ± 4%

Fig. 7-23.

7-3-3. Focus Adjustment

Model	Playback
Signal	Alignment tape: For checking Hi8 mode operations (WR5-8NSE) Monoscope section

Adjusting method:

1) Adjust the focus ring to obtain the optimum focus. (Refer to Fig. 7-22.)

7-3-4. Aberration Adjustment

Model	E-E
Signal	Dot pattern
Specified Value	Refer to Fig. 7-24.

Adjusting method:

1) Adjust the aberration adjustment ring so that the tracing of the dot becomes less than twice the diameter of the dot, or the fan aberration becomes less than the diameter of the dot.
2) If the centering becomes displaced here, perform the centering adjustment from the beginning again.

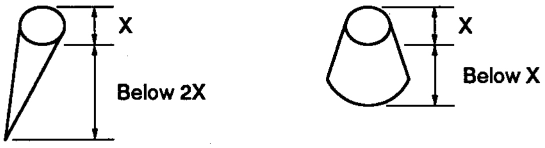


Fig. 7-24.

7-3-5. Horizontal Oscillation Frequency Adjustment (VF-42 board)

Model	Playback
Signal	Alignment tape: For checking Hi8 mode operations (WR5-8NSE)
Measurement Point	Positive pole terminal of C516
Measuring Instrument	Digital voltmeter or oscilloscope (DC range)
Adjustment Element	RV501
Specified Value	2.60 ± 0.05 Vdc

Adjusting method:

1) Adjust to 2.60 ± 0.05 Vdc using RV501.

7-3-6. Horizontal Amplitude Adjustment (VF-42 board)

Model	Playback
Signal	Alignment tape: For checking Hi8 mode operations (WR5-8NSE) Monoscope section
Adjusting Element	C504
Specified Value	6 ± 2%

Adjusting method:

1) Rotate RV502, and adjust the top and bottom sides of the monoscope image to the top and bottom edges of the display.
2) Rotate RV504 so that the brightness is the normal level.
3) Adjust the pattern (A) of the H size adjustment capacitor (C504) to "short" or "open", so that the horizontal direction over scan becomes 6 ± 2% (Left and right totals). (Refer to Fig. 7-26.)

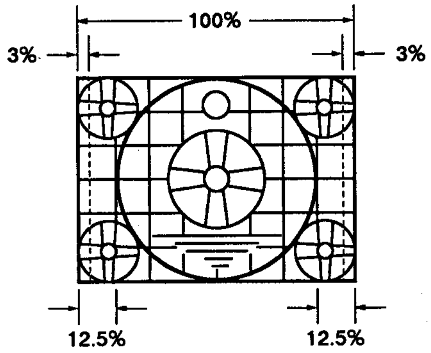
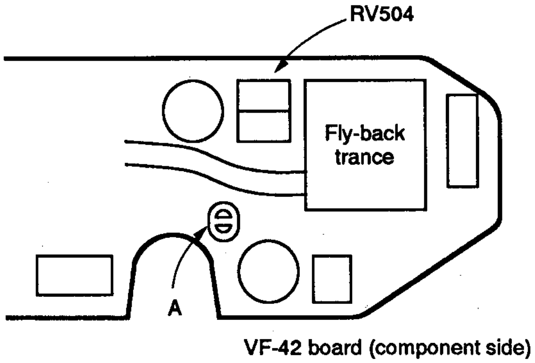


Fig. 7-25.



Section A	Size H
Open	Small
Short	Big

Fig. 7-26.

7-3-7. Vertical Amplitude Adjustment (VF-42 board)

Model	Playback
Signal	Alignment tape: For checking Hi8 mode operations (WR5-8NSE) Monoscope section
Adjusting Element	RV502
Specified Value	5 ± 2%

Adjusting method:

1) Adjust RV502 so that the vertical direction over scan becomes 5 ± 2% (Top and bottom totals).

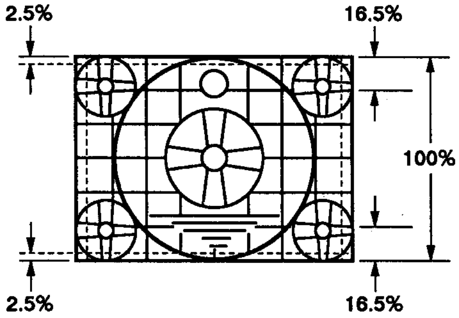


Fig. 7-27.

7-3-8. Brightness, Contrast Adjustments (VF-42 board)

Model	Playback
Signal	Alignment tape: For checking Hi8 mode operations (WR5-8NSE) Monoscope section
Adjusting Element	Brightness: RV504 Contrast: RV503

Adjusting method:

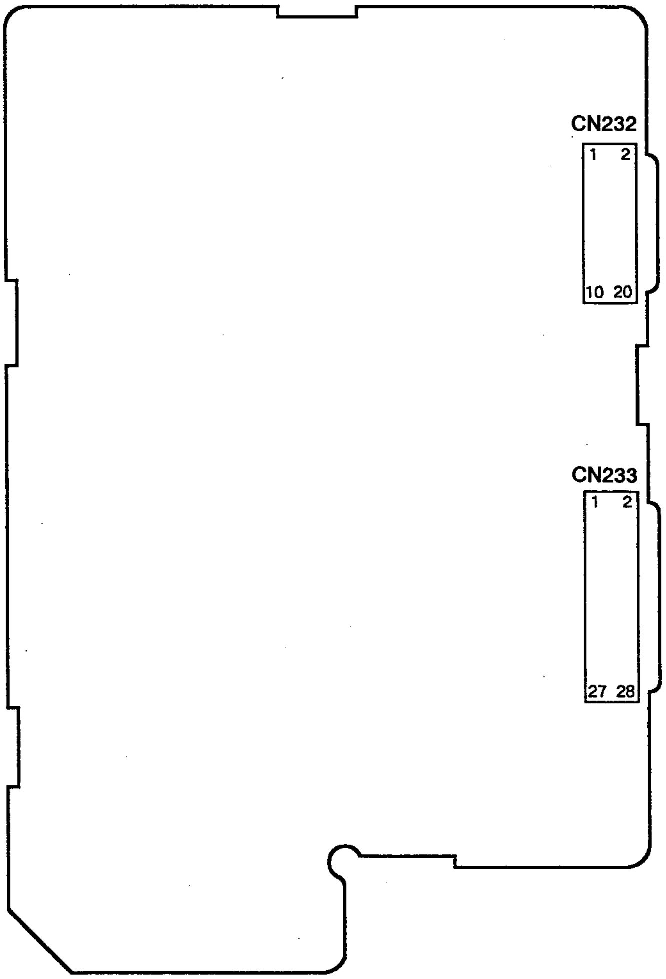
1) Rotate RV504 and RV503 alternately, and adjust so that the bright/dark sections of the gray scale are displayed correctly. (The bright section should not be so bright that the cross hatch in the monoscope circle appears vague. The dark section should not be so dark that the darkest section and the second darkest section of the gray scale cannot be differentiated.)

7-3-9. Horizontal Amplitude, Vertical Amplitude, Focus Check

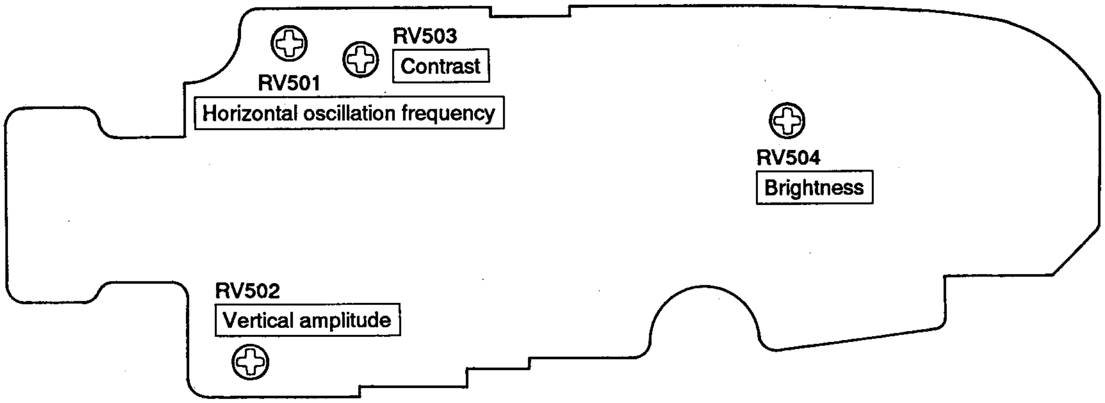
"7-3-6. Horizontal Amplitude Adjustment" and "7-3-7. Vertical Amplitude Adjustment" should both satisfy the specified values. If not, perform the adjustments from the beginning again. In this case, perform "7-3-8. Brightness, Contrast Adjustments" again. Moreover, check the focus, and if it found to be vague, perform "7-3-3. Focus Adjustment" and "7-3-4. Aberration Adjustment".

7-4. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

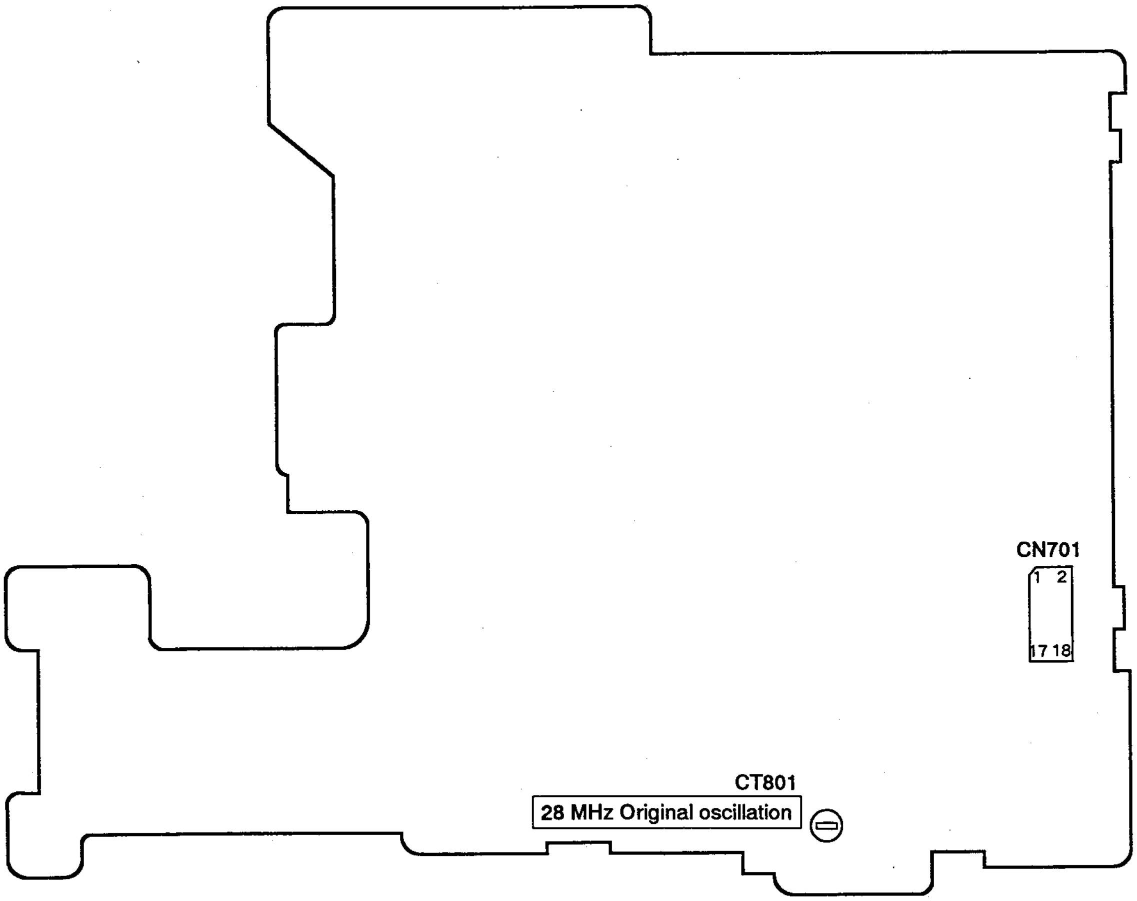
DD-38 BOARD (COMPONENT SIDE)


CN232
1 2
10 20
CN233
1 2
27 28

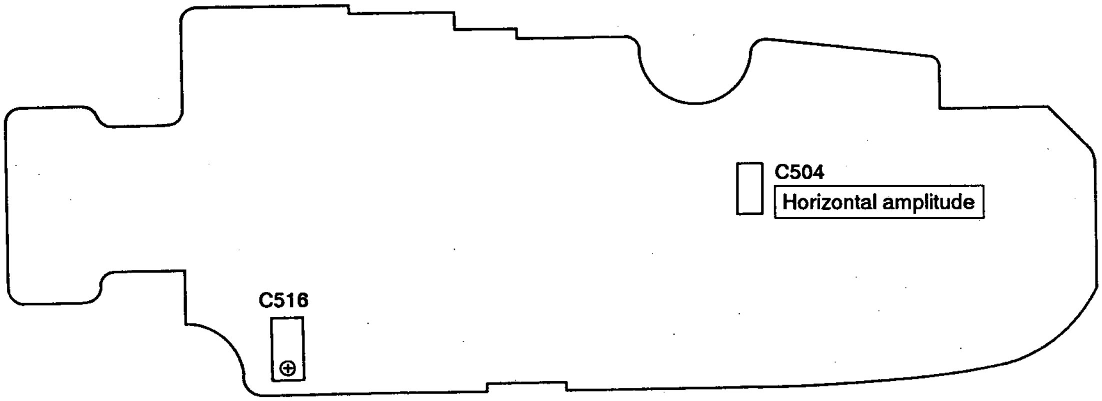
VF-42 BOARD (COMPONENT SIDE)


RV503
Contrast
RV501
Horizontal oscillation frequency
RV504
Brightness
RV502
Vertical amplitude

VC-103 BOARD (COMPONENT SIDE)


CN701
1 2
17 18
CT801
28 MHz Original oscillation

VF-42 BOARD (CONDUCTOR SIDE)


C504
Horizontal amplitude
C516

SECTION 8
MECHANICAL SECTION ADJUSTMENTS

Mechanical Section Adjustments

For details on the adjustments and checks of mechanical section and the mechanical parts, refer to the separate volume-"8 MM Video Mechanical Section Adjustment Guide II FL mechanism (Q mechanism)"

8-1. OPERATING WITH THE CASSETTE COMPARTMENT HOLDER ASSEMBLY REMOVED (Refer to Fig. 8-1.)

1. Loading

1) Refer to "2. Removal", and supply the power with the external section removed (however, leave the cabinet (R) connected so that the adjusting remote control unit can be connected.). (So that the mechanical deck section can be operated.)
2) Connect the adjusting remote control unit, and turn ON the HOLD switch.
3) Select page: 1, address: 00, and set data: 01.
(Release of the protect)
4) Select page: D, address: 01, and set data: 01.
(Test mode 1 setting)
5) Press the PAUSE button of adjusting remote control unit.
6) Turn off the HOLD switch of the adjusting remote control unit. (The adjusting remote control unit can be disconnected after this.)
7) The unit will be set into the loading mode when the lock board release arm ① is pressed in the direction of the arrow.
(To set the unit into the record mode, hold the push switch ② in place with the cohesion tape ③ before performing this operation.)
8) After completing all operations, be sure to perform "5. Processing after completing operations".

2. Setting the unit into the playback condition

1) Perform steps 1) to 7) of "1. Loading".
2) Press the playback button.

3. Setting the unit into the recording condition

1) Perform steps 1) to 7) of "1. Loading".
2) Press the record switch.

4. Ejecting

1) Press the EJECT button.

5. Processing after completing operations

1) Connect the adjusting remote control unit, and turn on the HOLD switch.
2) Select page: 1, address: 00, and set data: 01.
3) Select page: D, address: 01, and set data: 00.
4) Press the PAUSE button of the adjusting remote control unit.
5) Remove the power supply from the unit.

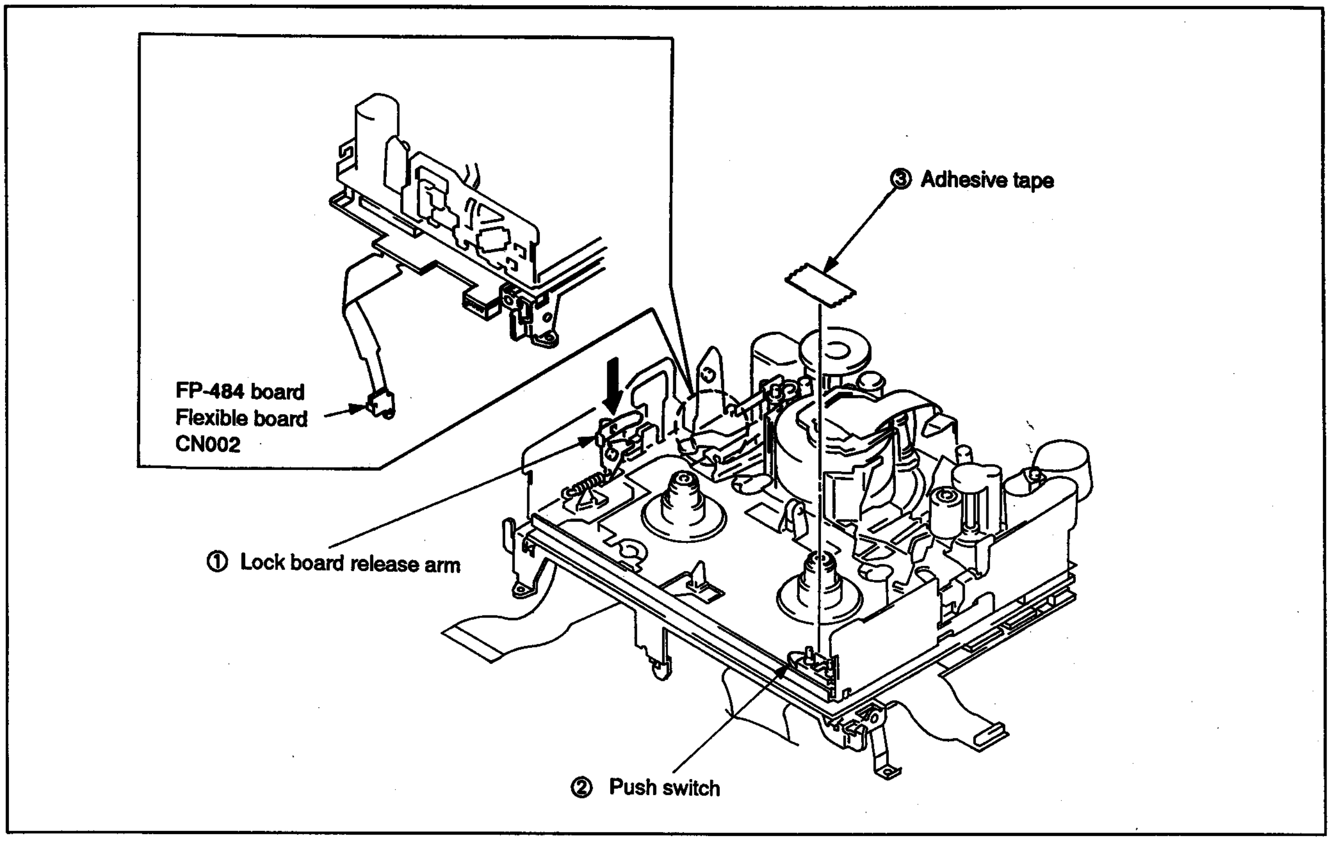

③ Adhesive tape
FP-484 board
Flexible board
CN002
① Lock board release arm
② Push switch

Fig. 8-1.

8-2. TAPE PATH ADJUSTMENT

1. Preparations for adjustment

1) Clean the tape path face (tape guide, drum, capstan shaft, pinch roller).
2) Connect the adjusting remote control unit to the remote terminal (LJ-6 board J511).
3) Turn on the HOLD switch of the adjusting remote control unit.
4) Select page: 1, address: 00, and set data: 01.
   (Release of the protect)
5) Select page: D, address: 01, and set data: 03.
   (Set the track shift mode. The adjusting remote control unit can be disconnected if its PAUSE button is pressed. In this case, be sure to perform "5-1-5. Processing after completing operation" after completing adjustments.)
6) Connect the oscilloscope.
   Channel 1-FP-484 board Pin ⑭ of CN002
   External trigger-FP-484 board Pin ⑨ of CN002
   (Connect the oscilloscope via the measuring pin for the video section (J-6082-140-A).)
7) Playback the alignment tape (WR5-1NP) for tracking.
8) Check that the RF waveform of the oscilloscope is flat at both the entrance and the exit sides.
   If not, perform the following adjustment.
9) Perform "8-1-5. Processing after completing operations", after completing adjustments.

FP-484 board CN002

1	LANC SIG
2	N.C.
3	RF GND
4	CAP FG
5	REC 1B
6	REC 2B
7	REC 1A
8	REC 2A
9	RF SWP
10	$\overline{\text{1/2 RF SWP}}$
11	PB RF CH1
12	PB RF CH2
13	RF GND
14	PB RF OUT

SECTION 9

VIDEO SECTION ADJUSTMENT

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 304.

9-1. PREPARATIONS BEFORE ADJUSTMENT

The following adjusting instruments are used for adjusting the video section.

9-1-1. Equipments to be used

1) TV monitor
2) Oscilloscope: 2 phenomena, band 30 MHz or wider, with delay mode. (Use a 10:1 probe unless specified otherwise.)
3) Frequency counter
4) Pattern generator with video output terminal
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuater
10) Regulated power supply
11) Alignment tape
    - For tracking adjustment (WR5-1NP)
      Part Code: 8-967-995-02
    - For normal mode video frequency characteristics adjustment (WR5-6N)
      Part Code: 8-967-995-12
    - For Hi8 mode video frequency characteristics adjustment (WR5-7NE)
      Part Code: 8-697-995-13
    - For checking normal mode operations
      For SP (WR5-5NSP)
      Part Code: 8-967-995-42
      Or (WR5-4NSP)
      Part Code: 8-967-995-41
      For LP (WR5-4NL)
      Part Code: 8-967-995-51
      For checking AFM stereo operations (WR5-9NS)
      Part Code: 8-967-995-23
    - For checking Hi8 mode operations (ME tape)
      For SP (WR5-8NSE)
      Part Code: 8-967-995-43
      For LP (WR5-8NLE)
      Part Code: 8-967-995-52
12) Adjusting remote control unit (J-6082-053-A)
13) Measuring pin jig for video section
    Part Code: J-6082-140-A
14) CF-29 board extension cord (48P, 0.8 mm)
    Part code: J-6082-177-A

9-1-2. Precautions Upon Adjustments

The EVF (Electronic viewfinder) section is not required for adjusting the video section.
Remove the following connector if removing the EVF section.
1. CN301 of VS-84 board (Pin 4)

The front panel assembly is not required for adjusting the video section.
Remove the following connectors if removing the front panel assembly.
1. CN902 of MA-109 board (Pin 8)
2. CN903 of MA-109 board (Pin 3)
3. CN401 of RM-54 board (Pin 3)

Cabinet (R) is necessary for connecting the adjusting remote control unit.
Use the CF-29 board extension cord (J-6082-177-A) when adjusting the video circuit and audio circuit.

Cabinet (L) is not required. Remove it.

The audio board (AU-118 board) is only required for "Audio System Adjustment" and the "REC AFM Level Check" of "Video System Adjustment". Remove the following connectors.
1. CN603 of AU-118 board (Pin 30)
2. CN602 of AU-118 board (Pin 3)

The lens block (Including the VD-21 and SE-22 boards) is only required for "Power Supply System Adjustment". Remove the following connectors and one mounting screw, and remove it from the VC-103 board.
1. CN002 of VD-21 board
2. CN851 of VC-103 board
3. CN801 of VC-103 board

9-1-3. Connectors for Adjustments (FP-484 board CN002)

Some video section adjustment points are concentrated on the FP-484 board CN002. Connect the measuring instrument via a measuring pin jig (J-6082-140-A).

Pin No.	Signal Name	Pin No.	Signal Name
1	LANC SIG	2	RF GND
3	REC 1B	4	REC 1A
5	RF SWP	6	PB RF CH1
7	RF GND	8	N.C
9	CAP FG	10	REC 2B
11	REC 2A	12	$\overline{1/2 \text{ RF SWP}}$
13	PB RF CH2	14	PB RF OUT

Table 9-1.

9-1-4. Connecting the Equipments

Connect the measuring instruments as shown in Fig. 9-1 according to the input terminal specifications (S VIDEO or VIDEO), adjust the power supply switch (CAMERA/OFF/VIDEO) (FK-51 board S119) to the "VIDEO" position, and perform the adjustments.

The input terminal is specified in the ( ) in the signal column. Either input terminal can be used when there are no specifications. However, the S video input terminal will have the priority. When adjusting with the video input terminal input, disconnect the connector from the S video input terminal.

Note: If the VIDEO input is used for adjustments which specify for the S VIDEO input to be used, the product specifications of the unit may not be satisfied in some cases. Be sure to perform according to the specifications. When adjustments are performed with the S video output terminal VTR as the signal source, the efficiencies of the unit may be affected by the VTR. It is recommended that a pattern generator with a Y/C separation output terminal be used as much as possible.

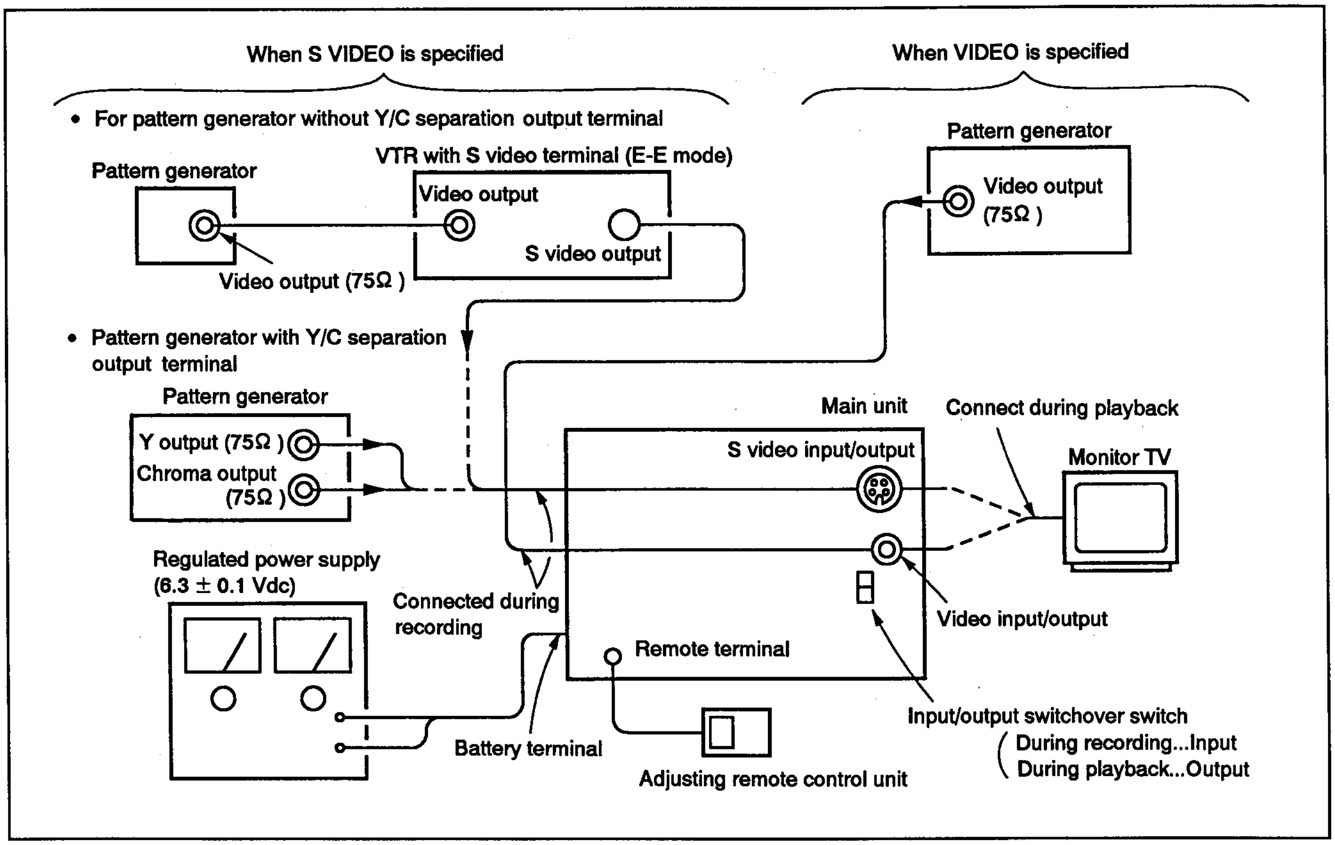

When S VIDEO is specified
• For pattern generator without Y/C separation output terminal
Pattern generator
VTR with S video terminal (E-E mode)
Video output
S video output
Video output (75Ω)
• Pattern generator with Y/C separation output terminal
Pattern generator
Y output (75Ω)
Chroma output (75Ω)
Regulated power supply
(6.3 ± 0.1 Vdc)
Connected during recording
Battery terminal
When VIDEO is specified
Pattern generator
Video output (75Ω)
Main unit
S video input/output
Connect during playback
Monitor TV
Video input/output
Remote terminal
Adjusting remote control unit
Input/output switchover switch
During recording...Input
During playback...Output

Fig. 9-1.

9-1-5. Checking the Input Signals

As the video signal obtained from the pattern generator is used as the adjusting signal for adjusting the VTR section, this video output signal must be within the given specifications.

1. For S VIDEO Input

Connect the oscilloscope to the Y signal terminal of the S video input/output terminal, and check that the sync signal of the Y signal is approximately 0.3 Vp-p and that the amplitude of the video section is approximately 0.7 Vp-p. (When the VTR with a S video output terminal is used, check that the chroma signal and burst signal have not remained as well.) Connect the oscilloscope to the chroma signal terminal of the S VIDEO IN terminal, and check that the burst signal amplitude of the chroma signal is approximately 0.3 Vp-p and flat, and that the amplitude ratio of the burst signal to the chroma signal is 0.30: 0.66. The Y and chroma signals used in the adjustment are shown in Fig. 9-2.

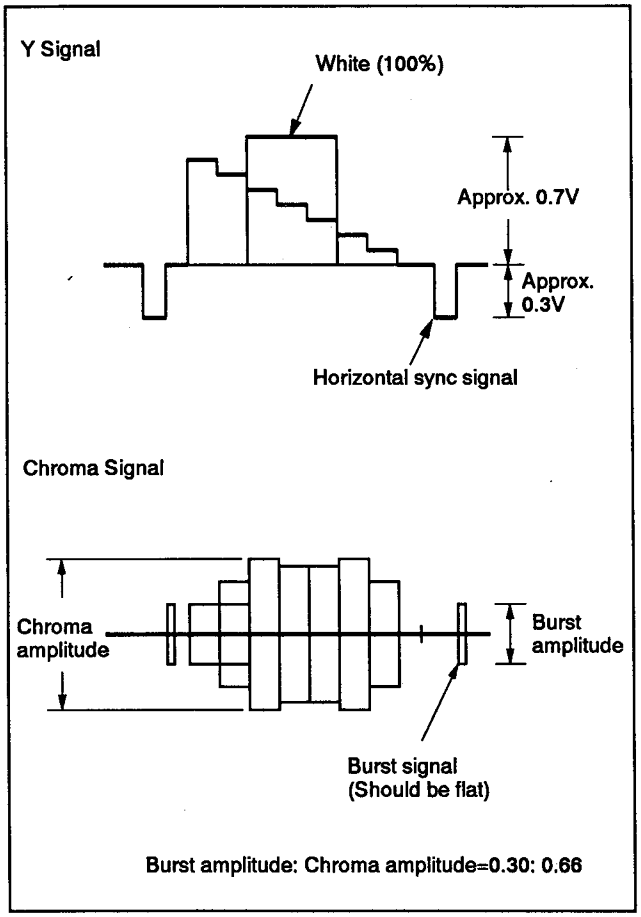

Y Signal
White (100%)
Approx. 0.7V
Approx. 0.3V
Horizontal sync signal
Chroma Signal
Chroma amplitude
Burst amplitude
Burst signal (Should be flat)
Burst amplitude: Chroma amplitude=0.30: 0.66

Fig. 9-2. Color Bar Signal of the Pattern Generator

2. For VIDEO Input

Connect the oscilloscope to the video input/output terminal, and check that the amplitude of the sync signal of the video signal is approximately 0.3V, the amplitude of the video section is approximately 0.7V, the amplitude of the burst signal is approximately 0.3V and flat, and that the level ratio of the burst signal and the [red] signal is 0.30: 0.66.

The video signal (color bar) used for electric adjustments of the VTR section is shown in Fig. 9-3.

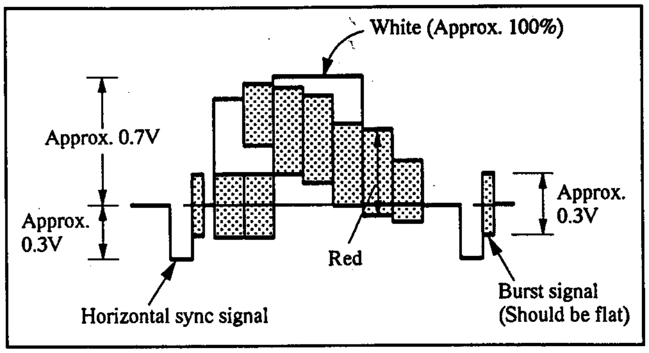

White (Approx. 100%)
Approx. 0.7V
Approx. 0.3V
Approx. 0.3V
Red
Horizontal sync signal
Burst signal (Should be flat)

Fig. 9-3. Color Bar Signal of the Pattern Generator

9-1-6. Alignment Tape

The following table lists alignment tapes which are available. Use the tape specified in the signal column for each adjustment. If the type of tape to be used for checking operations is not specified, use whichever type.

Name	Record-ing mode	Tape type	Tape speed	Recording contents		Usage
				Video area	PCM area	
Tracking WR5-1NP	L	MP	SP	CH2: Signal for 1 MHz tape path adjustment		Tape path adjustment Switching position adjustment
Video frequency characteristics WR5-7NE	E	ME	SP	RF sweep 0 to 15 MHz Marker 2, 4.5, 7, 8.5, 10 MHz		Frequency characteristics adjustment
Video frequency characteristics WR5-2N	L	MP	SP	RF sweep Marker 1, 3.58, 5.5, 7 MHz		
Operation check (SP mode) WR5-5NSP	L	MP	SP	• Video signal Color bar 4 minutes Monoscope 4 minutes • Audio signal (AFM) 400 Hz 60% modulation	• Audio signal (PCM) Monoscope section 20 Hz 20 sec. 400 Hz 20 sec. 14 kHz 20 sec. Repeated 4 times Color bar section 1 kHz 4 minutes	Checking operations
Operation check WR5-8NSE	E	ME	SP		• Audio signal (PCM) 400 Hz	
Operation check WR5-4NL	L	MP	LP	• Video signal Color bar 4 minutes Monoscope 4 minutes • Audio signal (AFM) 400 Hz 60% modulation		
Operation check WR5-8NLE	E	ME	LP		• Audio signal (PCM) 400 Hz	
AFM stereo Operation check WR5-9NS	L	MP	SP	• Video signal Color bar 4 minutes Monoscope 4 minutes • Audio signal (AFM) Stereo section (color bar) Lch: 400 Hz, Rch: 1 kHz (L+R: 1.5 MHz ± 60 kHz DEV L–R: 1.7 MHz ± 30 kHz DEV) Bilingual section (Monoscope) MAIN: 400 Hz (1.5 MHz ± 60 kHz DEV) SUB: 1 kHz (1.7 MHz ± 30 kHz DEV)	• Audio signal (PCM) 400 Hz 8 minutes	AFM stereo Checking operations

Note: Recording mode

L	Normal (Original) mode
E	hi8 (hi band) mode

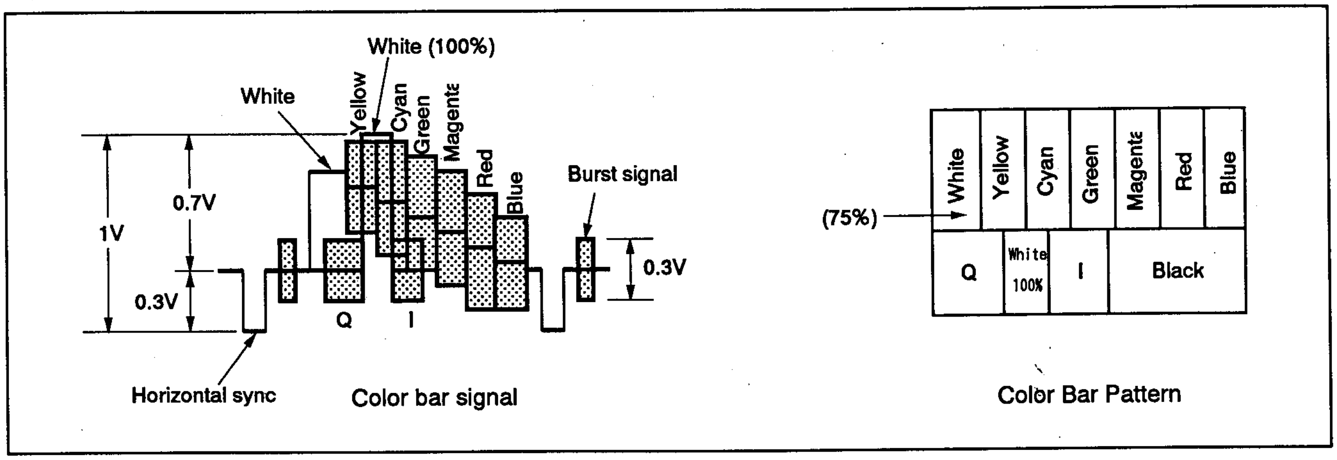
Tape type

MP	Applying metal tape
ME	Steam metal tape

Table 9-2.

Fig. 9-4. shows the 75% color bar signals recorded on the alignment tape.

Note: Measure using the video input/output terminal (Terminated at 75 Ω)


White (100%)
White
Yellow
Cyan
Green
Magenta
Red
Blue
Burst signal
1V
0.7V
0.3V
0.3V
Q
I
Horizontal sync
(75%)
White
Yellow
Cyan
Green
Magenta
Red
Blue
Q
White 100%
I
Black

Color bar signal

Color Bar Pattern

Fig. 9-4. Color Bar Signals of the Alignment Tape

9-1-7. Input/Output Level and Impedance

Video input	Pin jack Input signal: 1 Vp-p, 75Ω unbalanced, sync negative
Video output	Pin jack Output signal: 1 Vp-p, 75Ω unbalanced, sync negative
S video input	Four pins mini DIN Luminance signal: 1 Vp-p, 75Ω unbalanced, sync negative Color signal: 0.286 Vp-p, 75Ω unbalanced
S video output	Four pins mini DIN Luminance signal: 1 Vp-p, 75Ω unbalanced, sync negative Color signal: 0.286 Vp-p, 75Ω unbalanced
Audio input	Pin jack Input level: –7.5 dBs (0 dBs=0.775 Vrms) Input impedance: Above 47 kΩ
Audio output	Pin jack Specified output: –7.5 dBs Output impedance: Below 2.2 kΩ

9-1-8. Record Mode (Normal/Hi8) Switchover

The record mode (Normal/Hi8) of this unit is switched as shown in the following table. The playback mode (Normal/Hi8) is switched automatically according to the record mode of the tape played back.

Hi8 Switch (CF-29 board S203)	Tape Used	Record Mode
Automatic	ME	Hi8
	Hi8 MP	
	MP	Normal
Off	ME	Normal
	Hi8 MP	
	MP	

Table 9-3.

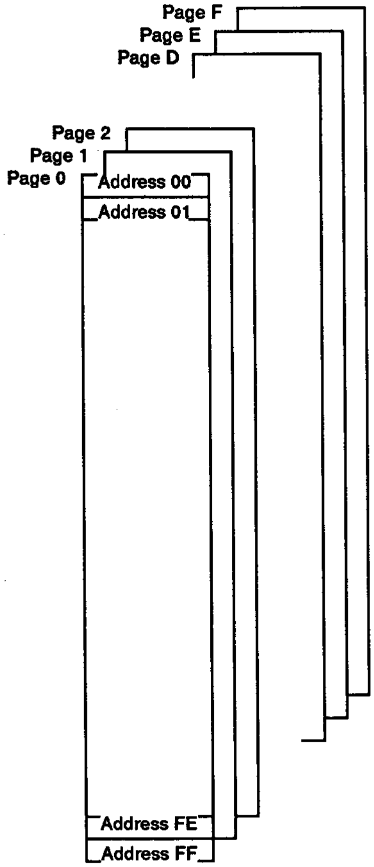
9-1-9. Service Mode

1. Setting the Service mode

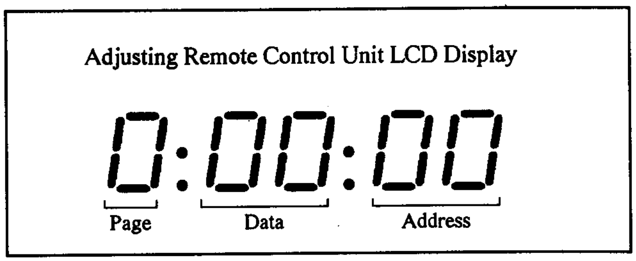
The service mode consists of the adjustment mode which adjusts the EVR and the test mode which displays the condition of the unit.

The unit can be shifted into the test mode and adjustment mode by connecting the adjusting remote control unit (set the HOLD switch to the HOLD side).

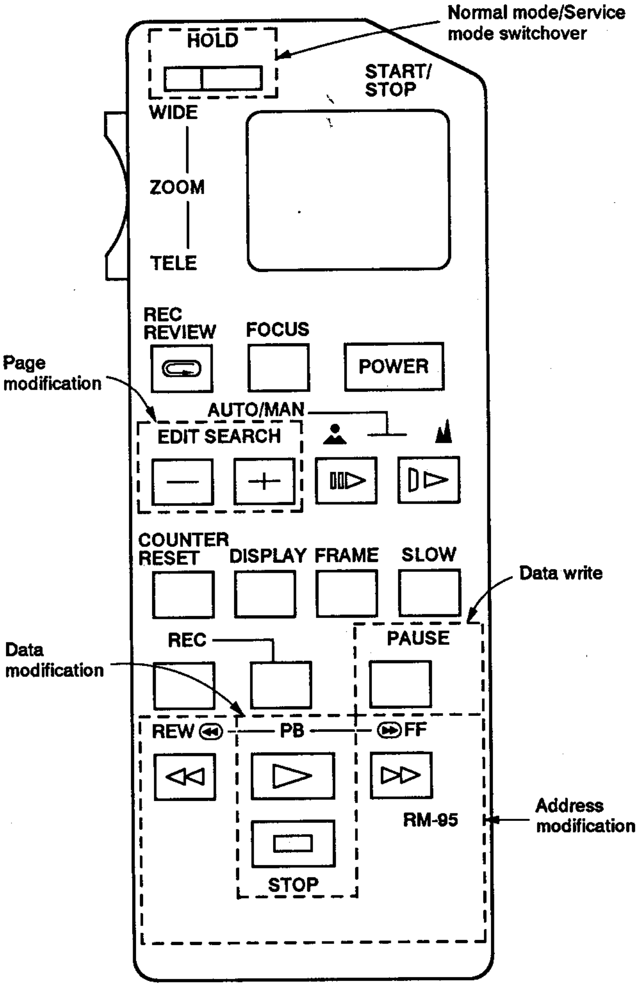
(1) Service LANC memory map


Page F
Page E
Page D
Page 2
Page 1
Page 0
Address 00
Address 01
Address FE
Address FF

Page	Page assignment
0	
1	Mode controller RAM, I/O (Note 1)
2	Mechanism controller RAM, I/O (Note 1)
3	
4	
5	
6	Camera controller RAM, I/O (Note 1)
7	
8	
9	
A	Camera controller RAM, I/O (Note 1)
B	
C	
D	VTR EE PROM (Note 2)
E	Camera EE PROM (VAP) (Note 3)
F	Camera EE PROM (Note 3)


Adjusting Remote Control Unit LCD Display
0:00:00
Page
Data
Address

Adjusting remote control unit RM-95 (J-6082-053-A)

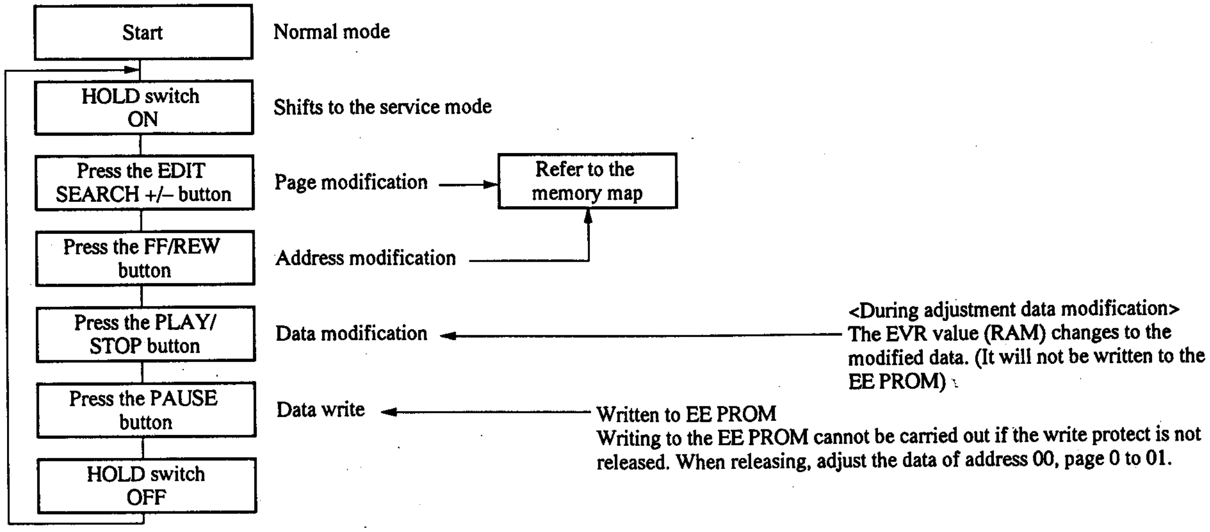

Normal mode/Service mode switchover
HOLD
START/ STOP
WIDE
ZOOM
TELE
REC REVIEW
FOCUS
POWER
Page modification
AUTO/MAN
EDIT SEARCH
COUNTER RESET
DISPLAY
FRAME
SLOW
Data write
REC
PAUSE
Data modification
REW
PB
FF
RM-95
Address modification
STOP

Note 1: If the data of this page is rewritten using the adjusting remote control unit to set the adjustment mode or test mode, this data will not be written in the EEPROM (non-volatile memory). The original condition (normal condition) can be returned by removing the main power supply (6.3V).

Note 2: The data of this page is written in the EEPROM (VC-103 board IC923).

Note 3: The data of this page is written in the EEPROM (VC-103 board IC701).

Shifting to the Service Mode Using the Adjusting Remote Control Unit


Start
Normal mode
HOLD switch ON
Shifts to the service mode
Press the EDIT SEARCH +/– button
Page modification
Refer to the memory map
Press the FF/REW button
Address modification
Press the PLAY/ STOP button
Data modification
Press the PAUSE button
Data write
HOLD switch OFF

<During adjustment data modification>
The EVR value (RAM) changes to the modified data. (It will not be written to the EE PROM)

Written to EE PROM
Writing to the EE PROM cannot be carried out if the write protect is not released. When releasing, adjust the data of address 00, page 0 to 01.

Command Name	Command Function	Normal LANC command
Page Up	Page +1	Edit Search +
Page Down	Page –1	Edit Search –
Direc Page Set	Sets the specified page	Event Clear
Address Up	Address +1	Fast Forward
Address Down	Address –1	Rewind
Data Up	Data +1	Play Back
Data Down	Data –1	Stop
Store	Writes the data to the EE PROM. RAM	Pause

2. Page D Write Protect

Release/set the page D write protect.

Page 0	Address 00

Data	Function
00	Normal (Write protect condition)
01	Write protect release

3. Test Mode Setting

Each type of test mode is set/released. Release the protect (page: 1, address: 00, data: 01), before setting the data.

Page D (or Page 4)	Address 01

Data	Function
00	Normal
01	Test mode 1 Various emergency inhibition and release Drum, capstan, loading motor, reel, tape top, end, DEW SP/LP automatic distinction inhibition, manual switchover (EDIT SW ON: LP, OFF: SP) 5 minutes pause release inhibition Power off inhibition release by battery end
02	Test mode 2 Do not use
03	Test mode 3 Track shift Plays back the track shift Rear lock distinction inhibition during PB SP/LP automatic distinction inhibition, manual switchover (EDIT SW ON: LP, OFF: SP)
04	Test mode 4 Rear lock mode Rear lock playback is performed SP/LP automatic distinction inhibition, manual switchover (EDIT SW ON: LP, OFF: SP)
05	Test mode 5 SP/LP automatic distinction inhibition, manual switchover (EDIT SW ON: LP, OFF: SP)

※ Page: D and page: 4 have the same functions. However, the data cannot be written in the non-volatile memory (EEPROM) for page: 4.

※ This address data will be recorded on the non-volatile memory by pressing the PAUSE button on the adjusting remote control unit for page: D. Take note, as when this happens, the test mode will not be released even if the main power is turned off (6.3 Vdc).

※ Be sure to return the data of this address data to 00 after completing adjustments/repairs, and press the PAUSE button on the adjusting remote control unit.

4. Emergency code

Faults (errors) can be checked.

Page D	Address 06

First emergency code

……The first error code generated

Page D	Address 07

Last emergency code

…… The last error code generated (this data will be renewed each time an error occurs.)

※ Be sure to rewrite the data of addresses 06 and 07 to 00 after completing repairs/adjustments.

※ When rewriting data, be sure to press the PAUSE button of the remote control unit after setting the data.

Code	Error condition
00	No error
01	Loading motor error
02	Reel error during unloading
03	Other reel errors
04	Capstan error
05	FG error during drum start up
06	PG error during drum start up
07	FG error during drum regular condition
08	PG error during drum regular condition
09	Phase error during drum regular condition

5. Emergency mode

The operation mode during an error outbreak can be checked.

Page D	Address 08

First emergency mode
……The operation mode when the first error is generated

Page D	Address 09

Last emergency mode
……The operation mode when the last error is generated
(This data will be renewed each time an error occurs.)

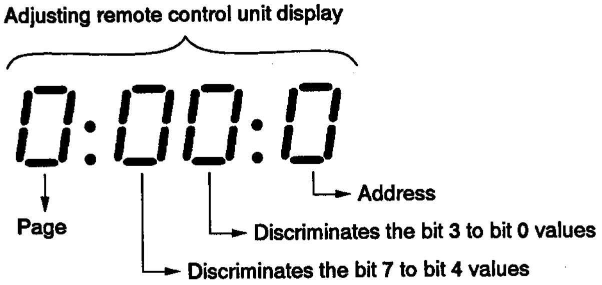
※ Be sure to rewrite the data of addresses 08 and 09 to 00 after completing repairs/adjustments.

※ When rewriting data, be sure to press the PAUSE button of the adjusting remote control unit after setting the data.

Code	Error condition
00	BEFOR INITIALIZE
01	EJECTED
02	NORMAL STOP
03	FF
04	NORMAL REC
06	NORMAL PB
07	PB PAUSE
12	LOADING
14	REC PAUSE
27	1/5 SLOW
31	UNLOADING
46	CUE
56	REVIEW
62	STOP TAPE END
67	FRAME
72	STOP TAPE TOP
83	REWIND
85	REC REVIEW(+)
95	REC REVIEW(–)
A2	EMERGENCY STOP
A5	EDIT SEARCH(+)
B1	EMERGENCY UNLOADING
B2	STOP EMERGENCY 1
B5	EDIT SEARCH(–)
C2	STOP EMERGENCY 2
E2	STOP NO CASSETTE
F5	EDIT PAUSE

6. Bit Value Discrimination

It is necessary to discriminate the bit values with the display data on the adjusting remote control unit for the following items. Use the following table to discriminate if the bit value is "1" or "0".


Adjusting remote control unit display
0:00:0
Address
Page
Discriminates the bit 3 to bit 0 values
Discriminates the bit 7 to bit 4 values

Remote Control Unit Display	Bit Value			
	bit 3 or bit 7	bit 2 or bit 6	bit 1 or bit 5	bit 0 or bit 4
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
Ⓐ→ 8	1	0	0	0
9	1	0	0	1
A(A)	1	0	1	0
B(b)	1	0	1	1
C(c)	1	1	0	0
D(d)	1	1	0	1
Ⓑ→ E(E)	1	1	1	0
F(F)	1	1	1	1

(Example) If the remote control unit display data is "8E", the bit value of bit7 to bit4 can be discriminated from column Ⓐ, and that of bit3 to bit0 from column Ⓑ.

7. Cassette Compartment Lock Switch Check

Page 1	Address 23

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
					CC LOCK		

CC LOCK:
"0"=Up
"1"=Down (Lock)

8. Mechanism Section Switches Check, Etc.

Page 1	Address 3E

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
	Mode switch						
MSW C	MSW B	MSW A		REC PROOF	ME/MP	PB E/L	Hi8 MP

REC PROOF:
"1"=Record prohibited
"0"=Record possible

ME/MP:
"1"=ME tape
"0"=MP tape

PB E/L:
"1"=Hi8 mode playback
"0"=Others

Hi8 MP:
"1"=Hi8 MP tape
"0"=Others

Mode Switch Position	**Adjusting Remote Control Unit Display**
READY (STOP)	2*
GL	4*
USE	6*
EJECT	8*
RP (REC, PB, FF, REW, CUE, REVIEW, PAUSE)	A*
LS	C*
BL	D*

*: 0 to F

9. Mechanism Control (VS-84 board IC153) Condition Check

Page 1	Address 3D

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
VIDEO MUTE	AUDIO MUTE	VA PB MODE	JOG	PB CLOG	REC CLOG	SYNC DET	PB SP/LP DET

"1"=LP playback
"0"=Others

"1"=VTR SYNC present
"0"=No VTR SYNC

"1"=Head clog generation
"0"=Others

"1"=No video signal
"0"=Video signal present

"1"=Variable speed playback
"0"=Others

"1"=PB mode
"0"=E-E mode

"1"=Mute
"0"=Audio output

"1"=Mute
"0"=Video output

10. Mechanism Control Input Check

Page 1	Address 42

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
VIDEO MUTE	AUDIO MUTE	VA PB MODE	JOG	PB CLOG	REC CLOG	SYNC DET	PB SP/LP DET

"0"=Dew outbreak
"1"=Others

"0"=S VIDEO terminal connection condition
"1"=S VIDEO terminal open condition

"0"=During monaural external microphone use
"1"=Others

"1"=Audio input/output terminal (right) open condition
"0"=Audio input/output terminal (right) connection condition

"1"=During AFM stereo/bilingual tape playback
"0"=Others

11. Mechanism Control A/D Port Input Voltage Check

Page 4	Address 14

Checking method:

1) Set data 02 to page: 4, address: 0E.
   (A/D conversion processing active)
2) Set the following data to page: 4, address: 13, and select the A/D port to be displayed.

Data	Operation
00	Pin (62): AN0 (T REEL FG)
01	Pin (61): AN1 (S REEL FG)
02	Pin (60): AN2 (ATF ERROR)
03	Pin (59): AN3 (BATT SENS)
04	Pin (58): AN4 ($\overline{\text{DEW}}$)

3) Check the data of page: 4, address: 14.

Adjusting Remote Control Unit Display Data	A/D Port Input Voltage
FF to 00	Approx. 5 Vdc to 0 Vdc

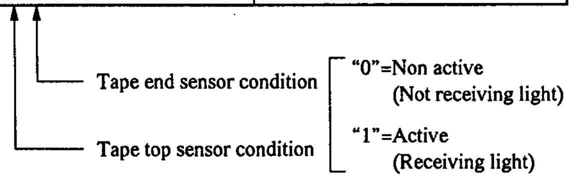
12. Tape Top/End Sensor Condition

Page 4	Address 0A

Checking method:

1) Set data 10 to page: 4, address: 0E.
   (Tape top/end sensor condition sampling processing active)
2) Check the data of page: 4, address: 0A.

Adjusting Remote Control Unit Display Data	Tape Top/End Sensor Condition
00	Tape present (Middle of tape)
01	Tape top
10	Tape end
11	No tape



13. Individual Operations of the Drum, Capstan, and Loading Motor

Page 4	Address 11

1) Adjust the mechanical section to the loading completion condition.
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Set data: 01 to page: 4, address: 0E.
   (Control permission from the adjusting remote control unit of the motor)
4) By setting the data in the following table to page: 4, address: 11, the corresponding motors can be operated individually.

Data	Operation
00	Normal
02	Drum forward rotation
04	Drum reverse rotation
06	Capstan forward rotation
08	Capstan reverse rotation
0A	Loading motor forward rotation
0C	Loading motor reverse rotation
01	All motors stop
03	
05	
07	
09	
0B	
0D	
0F	

6) After checking the operations, turn off the main power (6.3 Vdc).

14. Key Matrix Input Check

Page 1	Address 68 to 6F

The corresponding bit when the switch is on is "1".

	Bit 7	Bit 6 (K IN 6)	Bit 5 (K IN 5)	Bit 4 (K IN 4)	Bit 3 (K IN 3)	Bit 2 (K IN 2)	Bit 1 (K IN 1)	Bit 0 (K IN 0)
Address 68 (K OUT 0)			Video power supply (FK-51 S119)	Data screen (FK-51 S115)	Pause (FK-51 S112)	Record (FK-51 S109)	Cassette removal (FK-51 S103)	Hi-Fi sound (1) (CF-29 S201)
Address 69 (K OUT 1)		Movement correction (CF-29 S216)	Camera power supply (FK-51 S118, 119)	Fast forward (FK-51 S116)	Playback (FK-51 S113)	Rewind (FK-51 S110)	Stop (FK-51 S104)	Hi-Fi sound (2) (CF-29 S201)
Address 6A (K OUT 2)			Zoom microphone (MA-109 S901)	Zero memory (FK-51 S117)	Edit search (+) (FK-51 S114)	Edit search (–) (FK-51 S111)	Counter reset (FK-51 S105)	Edit (CF-29 S202)
Address 6B (K OUT 3)		Auto-lock (CF-29 S217)		Shutter speed (CF-29 S212)	Time (CF-29 S209)	Date (CF-29 S207)	White balance (CF-29 S204)	Hi8 (CF-29 S203)
Address 6C (K OUT 4)		Brightness (+) (CF-29 S218)	Cassette compartment lock (Mechanism section)	Focus (CF-29 S213)	Color/mode (CF-29 S210)	Memory (CF-29 S208)	Superimpose on/off (CF-29 S205)	Input/output (Pin jack)
Address 6D (K OUT 5)		Brightness (–) (CF-29 S219)	Area (CF-29 S215)	Summer time (CF-29 S214)	Brightness (CF-29 S211)	Fader (MA-109 S902)	Start/stop (CF-29 S206)	

15. Hi8 Switch, Edit Switch Check

Page 1	Address 0A

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
		Hi8	Edit				

"1"=Edit ON
"0"=Edit OFF

"1"=Off
"0"=Auto

16. Input/Output Switch, Hi-Fi Switch Check

Page 1	Address 0B

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
		Hi-Fi		Input/output			

"1"=Input
"0"=Output

Switch Position		
1	0	1
2	1	0
Stereo	0	0

17. Wireless Remote Control Unit Reception Content Check

Page 1	Address 1E

Wireless remote control unit key pressed	**Data**
None	FF
TELE	9A
WIDE	9B
Start/stop	99
Rewind	1B
Fast forward	1C
Stop	18
Playback	1A
Data screen	5A
Pause	19

18. White Balance Mode, Focus Mode Display/Switchover

Page 1	Address 9A

The mode can be switched when the data of page 1, address A3 is set to 04.

Data	White Balance Mode
*1	INDOOR
*2	OUTDOOR
*3	HOLD
*6	AUTO

Data	Focus Mode
0*	Manual
1*	Auto

* 0 to F

19. Electronic Shutter Speed Display/Switchover

Page 1	Address 9B

The speed can be switched when the auto-lock switch is turned OFF.

Data	Shutter Speed
00	1/60
01	1/100
02	1/250
03	1/1000
04	1/2000
05	1/4000
06	1/10000

20. LCD, LED Check, Etc.

Page 1	Address A3

Data	Mode
00	Normal
01	Key input prohibited
02	All segments of LCD, LED light up
04	Camera function renewal prohibited

21. Time Code Check

Page 1	Address BB to BE

Data	Adjusting remote control unit display data contents	
BB	Hour	BCD code ("FF" when the time code is not recorded/played back)
BC	Minutes	
BD	Seconds	
BE	Frame No.	

22. Data Code Check

Page 1	Address D0 to D5

Data	Adjusting remote control unit display data contents	
D0	Second	BCD code
D1	Minute	
D2	Hour	
D3	Day	
D4	Month	
D5	Year	

23. Page D Address List

Note 1: The adjustment data initial value is data input before performing video section adjustment (Page D) when the Page D data has been lost due to some reason.

Note 2: The data listed in the adjusting data memo column are fixed.
After adjusting, check that these data have been rewritten correctly.

Address	Name	Function ( ) indicates the adjusting voltage output terminal.	Adjusting Data	
			Initial Value	Memo Column
00	Category code	World clock standard area	00	00
01	Test mode	Test mode	00	00
02	Destination flag	Destination flag	43	43
03	BATT END	Battery end adjustment	8E	
04	SW POSITION (LOW)	SW POSITION adjustment (Top)	00	
05	SW POSITION (HIGH)	SW POSITION adjustment (Bottom)	80	
06	EMERGENCY code (FIRST)	Error codes and modes are recorded. Rewrite the data of these addresses to 00 after completing repairs/adjustments.	00	00
07	EMERGENCY code (LAST)		00	00
08	EMERGENCY mode (FIRST)		00	00
09	EMERGENCY mode (LAST)		00	00
0A	SR DATA (MP NORMAL SP)	CXA1207 serial data	68	68
0B	SR DATA (MP NORMAL LP)	CXA1207 serial data	5C	5C
0C	SR DATA (ME HI8 SP)	CXA1207 serial data	65	65
0D	SR DATA (ME HI8 LP)	CXA1207 serial data	6F	6F
0E	SR DATA (ME NORMAL SP)	CXA1207 serial data	58	58
0F	SR DATA (ME NORMAL LP)	CXA1207 serial data	5C	5C
10	SR DATA (MP HI8 SP)	CXA1207 serial data	65	65
11	SR DATA (MP HI8 LP)	CXA1207 serial data	6F	6F
12	SR DATA (EDIT ON NORMAL)	CXA1207 serial data	5C	5C
13	SR DATA (EDIT ON HI8)	CXA1207 serial data	65	65
14	CAM TITLE BLU R–Y	Camera titler color adjustment (Blue)	7D	
15	CAM TITLE BLU B–Y	Camera titler color adjustment (Blue)	BA	
16	CAM TITLE GRN R–Y	Camera titler color adjustment (Green)	62	
17	CAM TITLE GRN B–Y	Camera titler color adjustment (Green)	46	
18	CAM TITLE CYN R–Y	Camera titler color adjustment (Cyan)	60	
19	CAM TITLE CYN B–Y	Camera titler color adjustment (Cyan)	86	
1A	CAM TITLE RED R–Y	Camera titler color adjustment (Red)	A0	
1B	CAM TITLE RED B–Y	Camera titler color adjustment (Red)	7A	
1C	CAM TITLE VIO R–Y	Camera titler color adjustment (Violet)	9E	
1D	CAM TITLE VIO B–Y	Camera titler color adjustment (Violet)	BA	
1E	CAM TITLE YEL R–Y	Camera titler color adjustment (Yellow)	82	
1F	CAM TITLE YEL B–Y	Camera titler color adjustment (Yellow)	45	
20		DDS display starting year, EJECT permission etc.	20	20
21		CAM P ON, VTR P ON etc.	00	00
22 to 2F		Not used.	FF	FF
30	REC C 1A (ME)	ME 1Ach REC C level adjustment (IC305 ⑥)	90	
31	REC C 1A (MP)	MP 1Ach REC C level adjustment (IC305 ⑥)	90	
32	REC C 1B (ME)	ME 1Bch REC C level adjustment (IC305 ⑦)	90	
33	REC C 1B (MP)	MP 1Bch REC C level adjustment (IC305 ⑦)	90	
34	REC C 2A (ME)	ME 2Ach REC C level adjustment (IC305 ⑧)	90	

Table 9-4 (1).

Address	Name	Function ( ) indicates the adjusting voltage output terminal.	Adjusting Data	
			Initial Value	Memo Column
35	REC C 2A (MP)	MP 2Ach REC C level adjustment (IC305 ⑧)	90	
36	REC C 2B (ME)	ME 2Bch REC C level adjustment (IC305 ⑨)	90	
37	REC C 2B (MP)	MP 2Bch REC C level adjustment (IC305 ⑨)	90	
38	CAP FG OFFSET	Capstan FG bias adjustment (IC305 ⑬)	80	
39		Not used.	FF	FF
3A		Not used.	FF	FF
3B	MT Q		80	80
3C	MT F0 (E)	Hi8 middle tune fo frequency (IC306 ④)	57	57
3D	MT F0 (L)	Normal middle tune fo frequency (IC306 ④)	44	44
3E	MT 2A (E)	Hi8 2Ach frequency characteristics adjustment (IC306 ⑲)	78	
3F	MT 2A (L)	Normal 2Ach frequency characteristics adjustment (IC306 ⑲)	7F	
40	MT 2B (E)	Hi8 2Bch frequency characteristics adjustment (IC306 ③)	76	
41	MT 2B (L)	Normal 2Bch frequency characteristics adjustment (IC306 ③)	7F	
42	MT 1A (E)	Hi8 1Ach frequency characteristics adjustment (IC306 ⑱)	78	
43	MT 1A (L)	Normal 1Ach frequency characteristics adjustment (IC306 ⑱)	80	
44	MT 1B (E)	Hi8 1Bch frequency characteristics adjustment (IC306 ②)	7A	
45	MT 1B (L)	Normal 1Bch frequency characteristics adjustment (IC306 ②)	7D	
46	REC C RF (REC)	REC C RF level adjustment (IC305 ③)	56	
47	REC C RF (PB)	PB mode REC C RF level (IC305 ③)	00	00
48	RF CONT (ME)	ME RF CONT (IC305 ⑤)	58	58
49	RF CONT (MP)	MP RF CONT (IC305 ⑤)	58	58
4A	SYNC AGC	SYNC AGC adjustment (IC304 ⑱)	70	
4B		Not used.	FF	FF
4C	C COMB	Chroma comb filter adjustment (IC304 ⑲)	A7	
4D	IR	IR adjustment (IC304 ④)	A7	
4E	CAR.-E	Hi8 Y-FM carrier frequency adjustment (IC304 ⑤)	A7	
4F	CAR.-L	Normal Y-FM carrier frequency adjustment (IC304 ⑤)	A4	
50	DEV.-E	Hi8 Y-FM deviation adjustment (IC304 ⑥)	9E	
51	DEV.-L	Normal Y-FM deviation adjustment (IC304 ⑥)	97	
52	REC Y CONT (ME E)	Hi8 ME REC Y level adjustment (IC305 ⑫)	94	
53	REC Y CONT (MP E)	Hi8 MP REC Y level adjustment (IC305 ⑫)	94	
54	REC Y CONT (ME L)	Normal ME REC Y level adjustment (IC305 ⑫)	94	
55	REC Y CONT (MP L)	Normal MP REC Y level adjustment (IC305 ⑫)	94	
56	REC Y CONT (PB)	PB mode REC Y level (IC305 ⑫)	94	94
57	PB Y (EE)	EE mode PB Y level (IC304 ⑨)	00	00
58	PB Y (E)	Hi8 PB Y level adjustment (IC304 ⑨)	9A	
59	PB Y (L)	Normal PB Y level adjustment (IC304 ⑨)	95	
5A	EMPH (EE)	EE emphasis input level adjustment (IC304 ⑫)	92	
5B	EMPH (PB)	PB LINE OUT level adjustment (IC304 ⑫)	9A	
5C	REC L CONT (ME E SP)	Hi8 ME SP REC L CONT adjustment (IC305 ②)	C5	

Table 9-4 (2).

Address	Name	Function ( ) indicates the adjusting voltage output terminal.	Adjusting Data	
			Initial Value	Memo Column
5D	REC L CONT (MP E SP)	Hi8 MP SP REC L CONT adjustment (IC305 ②)	8B	
5E	REC L CONT (ME L SP)	Normal ME SP REC L CONT adjustment (IC305 ②)	C5	
5F	REC L CONT (MP L SP)	Normal MP SP REC L CONT adjustment (IC305 ②)	AE	
60	REC L CONT (ME E LP)	Hi8 ME LP REC L CONT (IC305 ②)	C5	C5
61	REC L CONT (MP E LP)	Hi8 MP LP REC L CONT (IC305 ②)	8B	8B
62	REC L CONT (ME L LP)	Normal ME LP REC L CONT (IC305 ②)	C5	C5
63	REC L CONT (MP L LP)	Normal MP LP REC L CONT (IC305 ②)	AE	AE
64	PILOT CONT (ME)	ME PILOT CONT (IC305 ④)	90	90
65	PILOT CONT (MP)	MP PILOT CONT (IC305 ④)	80	80
66	YD ADJ	YD adjustment (IC304 ②)	84	
67	PAL JOG	PAL JOG adjustment (IC304 ③)	00	00
68	D. CLIP (ME E SP)	Hi8 ME SP DARK CLIP (IC304 ⑦)	58	58
69	D. CLIP (MP E SP)	Hi8 MP SP DARK CLIP (IC304 ⑦)	79	79
6A	D. CLIP (ME L SP)	Normal ME SP DARK CLIP (IC304 ⑦)	53	53
6B	D. CLIP (MP L SP)	Normal MP SP DARK CLIP (IC304 ⑦)	53	53
6C	D. CLIP (ME E LP)	Hi8 ME LP DARK CLIP (IC304 ⑦)	58	58
6D	D. CLIP (MP E LP)	Hi8 MP LP DARK CLIP (IC304 ⑦)	79	79
6E	D. CLIP (ME L LP)	Normal ME LP DARK CLIP (IC304 ⑦)	53	53
6F	D. CLIP (MP L LP)	Normal MP LP DARK CLIP (IC304 ⑦)	53	53
70	W. CLIP (ME E SP)	Hi8 ME SP WHITE CLIP (IC304 ⑧)	7E	7E
71	W. CLIP (MP E SP)	Hi8 MP SP WHITE CLIP (IC304 ⑧)	70	70
72	W. CLIP (ME L SP)	Normal ME SP WHITE CLIP (IC304 ⑧)	A6	A6
73	W. CLIP (MP L SP)	Normal MP SP WHITE CLIP (IC304 ⑧)	A7	A7
74	W. CLIP (ME E LP)	Hi8 ME LP WHITE CLIP (IC304 ⑧)	7E	7E
75	W. CLIP (MP E LP)	Hi8 MP LP WHITE CLIP (IC304 ⑧)	70	70
76	W. CLIP (ME L LP)	Normal ME LP WHITE CLIP (IC304 ⑧)	A6	A6
77	W. CLIP (MP L LP)	Normal MP LP WHITE CLIP (IC304 ⑧)	A7	A7
78	REC/PB MX (REC)	REC matrix adjustment (IC306 ⑬)	AF	
79	REC/PB MX (PB)	PB matrix adjustment (IC306 ⑬)	AF	
7A	1.5 IR	1.5 MHz IR adjustment (IC306 ⑧)	AF	
7B	1.5 DEV	1.5 MHz deviation adjustment (IC306 ⑨)	AF	
7C	1.7 IR	1.7 MHz IR adjustment (IC306 ⑥)	AF	
7D	1.7 DEV	1.7 MHz deviation adjustment (IC306 ⑦)	AF	
7E	AUDIO FADER	Audio fader (IC304 ⑬)	00	00
7F	INDEX VCO	PB VCO oscillation frequency adjustment (IC306 ⑫)	7A	
80	ZOOM CONT B	Zoom microphone control B (IC305 ⑱)	00	00
81	ZOOM CONT A	Zoom microphone control A (IC305 ⑲)	00	00
82 to 8F		Not used.	FF	FF
90	ZOOM CONT A (ZOOM POS 0)	Zoom microphone control A (IC305 ⑲) } WIDE	6B	6B
91	ZOOM CONT B (ZOOM POS 0)	Zoom microphone control B (IC305 ⑱) ↑	00	00

Table 9-4 (3).

Address	Name	Function ( ) indicates the adjusting voltage output terminal.	Adjusting Data	
			Initial Value	Memo Column
92	ZOOM CONT A (ZOOM POS 1)	Zoom microphone control A (IC305 ⑲)	6B	6B
93	ZOOM CONT B (ZOOM POS 1)	Zoom microphone control B (IC305 ⑱)	04	04
94	ZOOM CONT A (ZOOM POS 2)	Zoom microphone control A (IC305 ⑲)	65	65
95	ZOOM CONT B (ZOOM POS 2)	Zoom microphone control B (IC305 ⑱)	09	09
96	ZOOM CONT A (ZOOM POS 3)	Zoom microphone control A (IC305 ⑲)	60	60
97	ZOOM CONT B (ZOOM POS 3)	Zoom microphone control B (IC305 ⑱)	0B	0B
98	ZOOM CONT A (ZOOM POS 4)	Zoom microphone control A (IC305 ⑲)	5B	5B
99	ZOOM CONT B (ZOOM POS 4)	Zoom microphone control B (IC305 ⑱)	0D	0D
9A	ZOOM CONT A (ZOOM POS 5)	Zoom microphone control A (IC305 ⑲)	56	56
9B	ZOOM CONT B (ZOOM POS 5)	Zoom microphone control B (IC305 ⑱)	16	16
9C	ZOOM CONT A (ZOOM POS 6)	Zoom microphone control A (IC305 ⑲)	50	50
9D	ZOOM CONT B (ZOOM POS 6)	Zoom microphone control B (IC305 ⑱)	21	21
9E	ZOOM CONT A (ZOOM POS 7)	Zoom microphone control A (IC305 ⑲)	4A	4A
9F	ZOOM CONT B (ZOOM POS 7)	Zoom microphone control B (IC305 ⑱)	30	30
A0	ZOOM CONT A (ZOOM POS 8)	Zoom microphone control A (IC305 ⑲)	40	40
A1	ZOOM CONT B (ZOOM POS 8)	Zoom microphone control B (IC305 ⑱)	3C	3C
A2	ZOOM CONT A (ZOOM POS 9)	Zoom microphone control A (IC305 ⑲)	31	31
A3	ZOOM CONT B (ZOOM POS 9)	Zoom microphone control B (IC305 ⑱)	45	45
A4	ZOOM CONT A (ZOOM POS A)	Zoom microphone control A (IC305 ⑲)	25	25
A5	ZOOM CONT B (ZOOM POS A)	Zoom microphone control B (IC305 ⑱)	51	51
A6	ZOOM CONT A (ZOOM POS B)	Zoom microphone control A (IC305 ⑲)	15	15
A7	ZOOM CONT B (ZOOM POS B)	Zoom microphone control B (IC305 ⑱)	56	56
A8	ZOOM CONT A (ZOOM POS C)	Zoom microphone control A (IC305 ⑲)	0D	0D
A9	ZOOM CONT B (ZOOM POS C)	Zoom microphone control B (IC305 ⑱)	60	60
AA	ZOOM CONT A (ZOOM POS D)	Zoom microphone control A (IC305 ⑲)	09	09
AB	ZOOM CONT B (ZOOM POS D)	Zoom microphone control B (IC305 ⑱)	61	61
AC	ZOOM CONT A (ZOOM POS E)	Zoom microphone control A (IC305 ⑲)	04	04
AD	ZOOM CONT B (ZOOM POS E)	Zoom microphone control B (IC305 ⑱) ↓	6B	6B
AE	ZOOM CONT A (ZOOM POS F)	Zoom microphone control A (IC305 ⑲) } TELE	00	00
AF	ZOOM CONT B (ZOOM POS F)	Zoom microphone control B (IC305 ⑱)	6B	6B

Table 9-4 (4).

9-2. POWER SYSTEM ADJUSTMENTS

1. Oscillator Frequency Adjustment (DD-38 board)

Mode	Camera record
Subject	Arbitrary
Measurement Point	Q238 collector
Measuring Instrument	Frequency counter
Adjusting Element	RV231
Specified Value	475 ± 5 kHz

Adjusting method:

1) Adjust RV231 so that the oscillator frequency becomes the specified value.

2. Voltage Adjustment (DD-38 board)

Mode	Camera record
Subject	Arbitrary
Measurement Point	Pin ㉖ of CN203 (VID 5V)
Measuring Instrument	Digital voltmeter
Adjusting Element	RV232
Specified Value	4.92 ± 0.01 Vdc

Adjusting method:

1) Adjust RV232 so that the VID 5V voltage becomes the specified value.

3. Power Voltage Check (DD-38 board)

Mode	Camera record
Subject	Arbitrary
Measuring Instrument	Digital voltmeter
EVR 5V check	
Measurement Point	Pins ㉑ and ㉔ of CN203
Specified Value	4.97 ± 0.05 Vdc
SS5V check	
Measurement Point	Pins ⑮ and ⑱ of CN203
Specified Value	4.87 ± 0.03 Vdc
M5V (2) check	
Measurement Point	Pins ⑩, ⑪ and ⑫ of CN203
Specified Value	5.03 ± 0.05 Vdc
VID 5V check	
Measurement Point	Pins ㉕ and ㉖ of CN203
Specified Value	4.92 ± 0.02 Vdc
AU 5V check	
Measurement Point	Pins ⑰ and ⑳ of CN203
Specified Value	4.89 ± 0.03 Vdc
DIG 5V check	
Measurement Point	Pins ⑨ and ⑩ of CN202
Specified Value	4.85 ± 0.03 Vdc
CAM 5V check	
Measurement Point	Pins ①, ③ and ⑥ of CN202
Specified Value	4.90 ± 0.05 Vdc
CAM 15V check	
Measurement Point	Pin ② of CN202
Specified Value	15.00 ± 0.15 Vdc
CAM -9V check	
Measurement Point	Pin ④ of CN202
Specified Value	-8.40 ± 0.40 Vdc
M5V check	
Measurement Point	Pins ⑭ and ⑮ of CN202
Specified Value	4.98 ± 0.05 Vdc

9-3. SYSTEM CONTROL SYSTEM ADJUSTMENTS

1. Page D Initial Value Input

If the page D data has been erased due to some cause, input the page D initial value before performing adjustments. For details on the initial value, refer to "Page D address list" in "9-1-9. Service Mode".

Mode	E-E
Signal	Arbitrary
Adjustment Page	D
Adjustment Address	00 to AF

Input method:

1) Release the write protect.
   Page: 1, address: 00, data: 01
2) Select page D, and input the initial value to each address.
   (After setting the data (initial value), be sure to press the PAUSE button of the adjusting remote control unit before changing the address.)

2. Battery End Adjustment

Mode	E-E
Signal	Arbitrary
Measurement Point	LCD display of the adjusting remote control unit
Measuring Instrument	
Adjustment Page	D
Specified Value	03 (BATT END)

Connection:

1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 9-5.

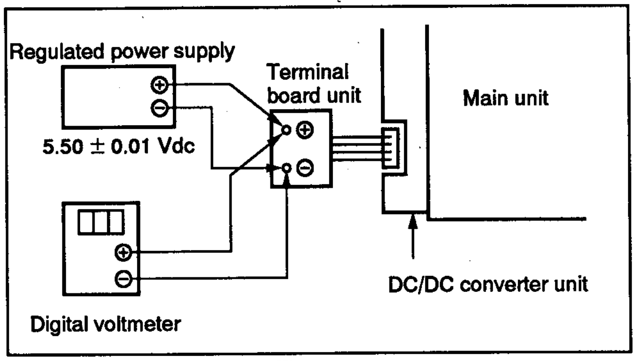


Fig. 9-5.

Adjusting method:

1) Adjust the regulated power supply output voltage so that the digital voltmeter display is 6.3 ± 0.1 Vdc.
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Set data: 01 to page: D, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Test mode 1 setting)
4) Decrease the voltage so that the digital voltmeter display is 5.50 ± 0.01 Vdc.
5) Select page: 4, address: 10, read the adjusting remote control unit display data, and take it as D03.
6) Set data D03 to page: D, address: 03, and press the PAUSE button of the adjusting remote control unit.
7) Set data: 00 to page: D, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Test mode 1 release)
8) Turn off the power supply.
9) Perform "Battery Down Check".

3. Battery Down Check

Mode	Camera record
Subject	Arbitrary

Connection

1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 9-5.

Checking method:

Remove the adjusting remote control unit, and perform the following check. If the check is not satisfied, perform from the beginning again.

1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display becomes 6.3 ± 0.1 Vdc.
2) Set to the camera recording mode.
3) Decrease the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.65 ± 0.01 Vdc.
4) Check that the 🔋 mark on the EVF (viewfinder) display is not lighted up. (TALLY lamp lights up).
5) Decrease the the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.53 ± 0.01 Vdc.
6) Check that the 🔋 mark and the TALLY lamp on the EVF display on the EVF display blinks every second.
7) Decrease the the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.47 ± 0.01 Vdc.
8) Check that the 🔋 mark and the TALLY lamp on the EVF display are blinking faster, the VTR stops and the power supply turns off.

9-4. SERVO SYSTEM ADJUSTMENTS

1. Switching Position Adjustment (FP-484 board)

Mode	Playback
Signal	Alignment tape: For tracking adjustment (WR5-1NP)
Measurement Point	CH1: Pin ⑨ of CN002 (RF SWP) CH2: Pin ⑫ of CN002 (PB RF CH2)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	04 (SW POSITION) (LOW) 05 (SW POSITION) (HIGH)
Specified Value	t1=0 ± 5 μsec

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Set data: 80 to page: D, address: 05.
3) Change the data of page: D, address: 05 (For coarse adjustments) and address: 04 (For fine adjustments), and adjust so that the switching position (t1) becomes the specified value.
   Note: Be sure to press the PAUSE button of the adjusting remote control unit before changing the address. If not, the new data will not be written in the memory.
4) Press the PAUSE button of the adjusting remote control unit.

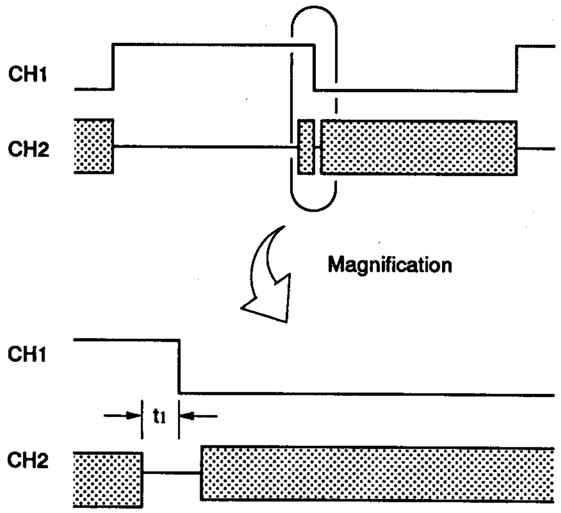


Fig. 9-6.

2. CAP FG Duty Adjustment (FP-484 board)

Mode	Record
Signal	Color bar
Measurement Point	Pin ④ of CN002 (CAP FG)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	38 (CAP FG BIAS)
Specified Value	Duty=50 ± 1%

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Set data: 80 to page: D, address: 38.
3) Change the data of page: D, address: 38, and adjust the duty of the CFG waveform to the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

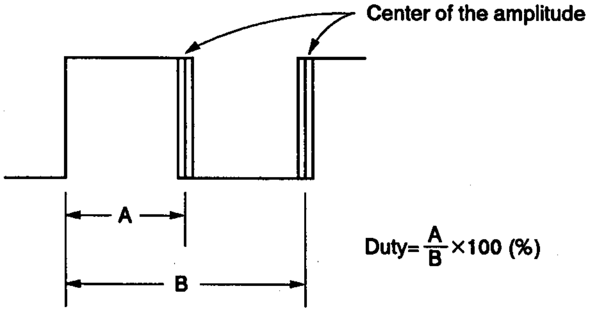


Fig. 9-7.

9-5. VIDEO ADJUSTMENTS

The adjustments of the video system must be performed according to the following adjustment procedure.

The color video signal supplied from the pattern generator is used as the video input signal for adjusting the video system in recording mode. Check that the sync signal and the color burst signal satisfy the specification specified during the adjustment set-up shown in Figs. 9-2. and 9-3.

Use a ME tape unless specified otherwise. Check that the Hi8 switch is at "Auto".

[Adjusting procedure]

1) Normal mode playback frequency characteristics adjustment
2) Hi8 mode playback frequency characteristics adjustment
3) Flying erase check
4) VXO oscillation frequency check
5) SYNC AGC level adjustment
6) IR adjustment
7) Chroma comb filter adjustment
8) Emphasis input level adjustment
9) PB Y level adjustment
10) PB LINE OUT level adjustment
11) Normal mode Y FM carrier frequency adjustment
12) Normal mode Y FM deviation adjustment
13) Hi8 mode Y FM carrier frequency adjustment
14) Hi8 mode Y FM deviation adjustment
15) Chroma emphasis adjustment
16) REC C RF level adjustment
17) REC Y level adjustment
18) REC L CONT level adjustment
19) REC C preset adjustment
20) REC ATF level check
21) Chroma flicker adjustment
22) REC AFM level check
23) YD adjustment

1. Normal Mode Playback Frequency Characteristics Adjustment (FP-484 board)

Mode	Playback
Signal	Alignment tape: For normal mode frequency characteristics adjustment (WR5-2N)
Measurement Point	Refer to Fig. 9-8.
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	43 (MT 1A (L)), 45 (MT 1B (L)), 3F (MT 2A (L)), 41 (MT 2B (L))
Specified Value	3.58 MHz level: 5.5 MHz level= 4: (3 ± 0.3)

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of each address of page D, and adjust the level ratio of 3.58 MHz and 5.5 MHz of each PB RF output waveform of 1a, 1b, 2a, 2b to the specified value.
   Note: After each address adjustment, be sure to press the PAUSE button of the adjusting remote control unit and memorize the data.

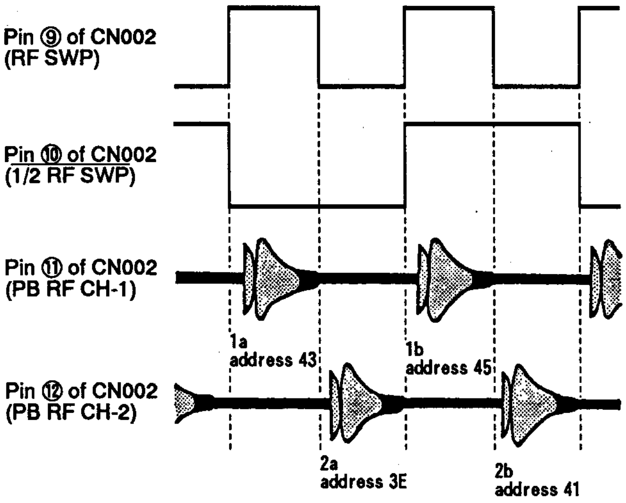

Pin ⑨ of CN002
(RF SWP)
Pin ⑩ of CN002
(1/2 RF SWP)
Pin ⑪ of CN002
(PB RF CH-1)
Pin ⑫ of CN002
(PB RF CH-2)
1a
address 43
1b
address 45
2a
address 3E
2b
address 41

Fig. 9-8.

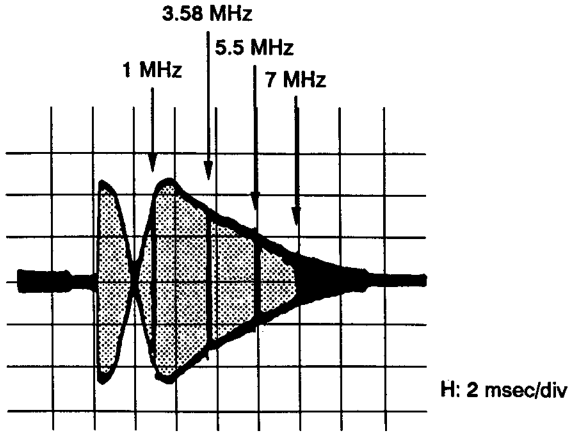


Fig. 9-9.

2. Hi8 Playback Frequency Characteristics Adjustment (FP-484 board)

Mode	Playback
Signal	Alignment tape: For Hi8 mode frequency characteristics adjustment (WR5-7NE)
Measurement Point	Refer to Fig. 9-10.
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	42 (MT 1A (E)), 44 (MT 1B (E)), 3E (MT 2A (E)), 40 (MT 2B (E))
Specified Value	4.5 MHz level: 8.5 MHz level= 3: (2.0 ± 0.2)

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of each address of page D, and adjust the level ratio of 4.5 MHz and 8.5 MHz of each PB RF output waveform of 1a, 1b, 2a, 2b to the specified value.
   Note: After each address adjustment, be sure to press the PAUSE button of the adjusting remote control unit and memorize the data.

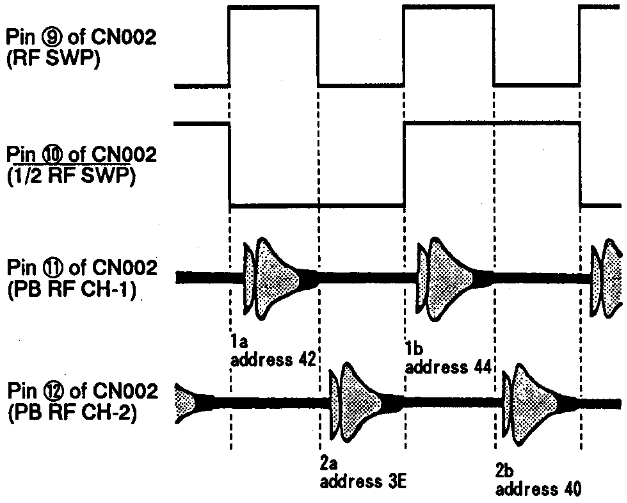

Pin ⑨ of CN002
(RF SWP)
Pin ⑩ of CN002
(1/2 RF SWP)
Pin ⑪ of CN002
(PB RF CH-1)
Pin ⑫ of CN002
(PB RF CH-2)
1a
address 42
1b
address 44
2a
address 3E
2b
address 40

Fig. 9-10.

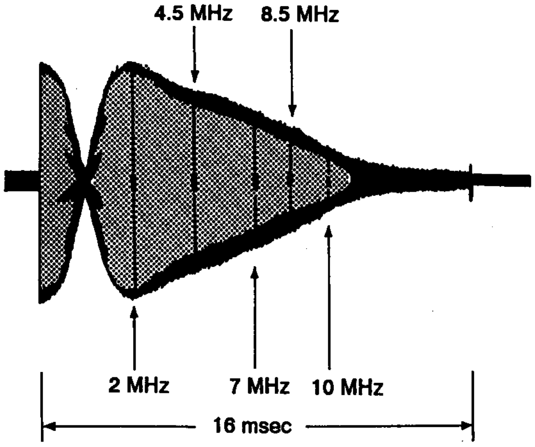


Fig. 9-11.

3. Flying Erase Check (VS-84 board)

Mode	Record
Signal	Arbitrary
Measurement Point	Pin ⑮ of CN001 (FE (X)) (JL231)
Measuring Instrument	Oscilloscope and frequency counter
Specified Value	Frequency: Above 7.5 MHz Voltage: Above 6.0 Vp-p

Note: Use a MP type tape.

Checking method:

1) Check that the oscillation frequency is above 7.5 MHz and that the oscillation voltage is above 6.0 Vp-p.

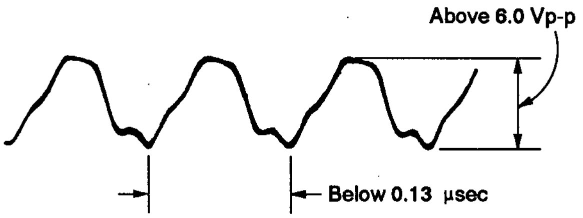


Fig. 9-12.

4. VXO Oscillation Frequency Check (VS-84 board)

Mode	Record
Signal	Color bar
Measurement Point	Pin ⑫ of IC501
Measuring Instrument	Frequency counter
Specified Value	3579545 ± 70 Hz

Note: Connect the frequency counter via a high impedance (approximately 10 MΩ) and low capacity (below 10 pF) buffer.

Adjusting method:

1) Check that the oscillation frequency of pin ⑫ of IC501 is 3579545 ± 70 Hz.

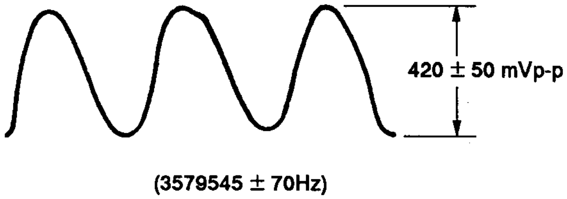


Fig. 9-13.

5. SYNC AGC Level Adjustment (VS-84 board)

Mode	Record
Signal	Color bar (S VIDEO)
Measurement Point	Pin ㉘ of IC401 (EE PB Y) (JL303)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	4A (SYNC AGC)
Specified Value	A=0.5 ± 0.01V

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 4A, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

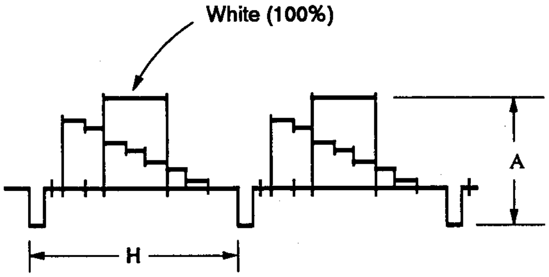


Fig. 9-14.

6. IR Adjustment (VS-84 board)

Mode	Record
Signal	Color bar (VIDEO)
Measurement Point	Pin ⑦ of IC401 (Y COMB OUT) (JL438)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	4D (SR IR)
Specified Value	Residual chroma component (A) is minimum (below 50 mVp-p)

Connection

1) Connect pin ⑭ of IC401 (or pin ② of IC402) to pin (51) of IC401 with a jumper wire.

Adjusting method:

1) Check that the input is "VIDEO".
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Change the data of page: D, address: 4D, and adjust so that the residual chroma component (A) becomes minimum.
4) Press the PAUSE button of the adjusting remote control unit.

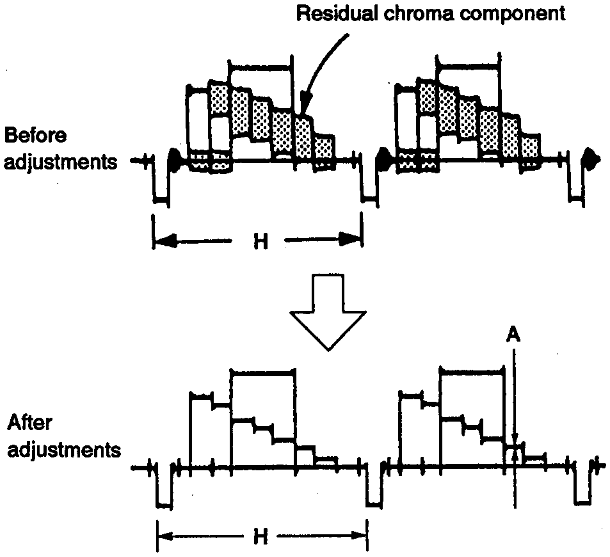


Fig. 9-15.

7. Chroma Comb Filter Adjustment (VS-84 board)

Mode	Record
Signal	Color bar (VIDEO)
Measurement Point	Pin ⑪ of IC401 (C+CD) (JL437)
Adjusting Element	Oscilloscope
Measuring Instrument	RV551 (Phase)
Adjustment Page	D
Adjustment Address	4C (C COMB)
Specified Value	Residual chroma component (A) is minimum.

Adjusting method:

1) Check that the input is "VIDEO".
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Change the data of page: D, address: 4C, and adjust the residual chroma component to minimum.
4) Adjust RV551 so that the residual chroma component (A) becomes minimum.
5) Repeat 3) and 4) until the specified value is satisfied.
6) Press the PAUSE button of the adjusting remote control unit.

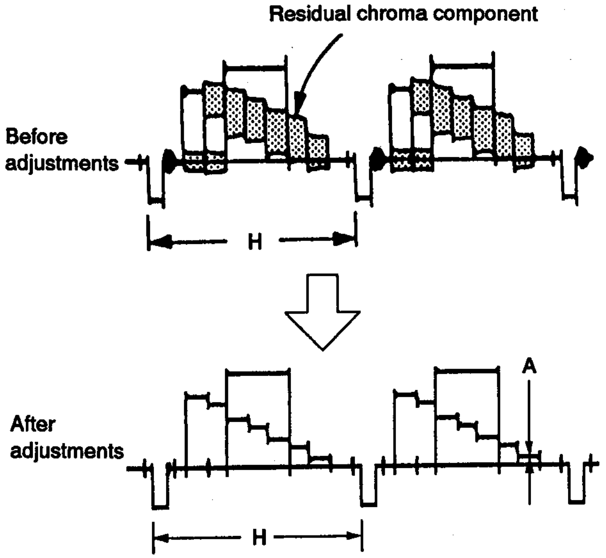


Fig. 9-16.

8. Emphasis Input Level Adjustment (VS-84 board)

Mode	Record
Signal	Color bar (S VIDEO)
Measurement Point	Pin ⑤ of IC403 (or Pin ③ of IC401) (JL447)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	5A (EMP LEVEL)
Specified Value	A=0.50 ± 0.01V

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 5A, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

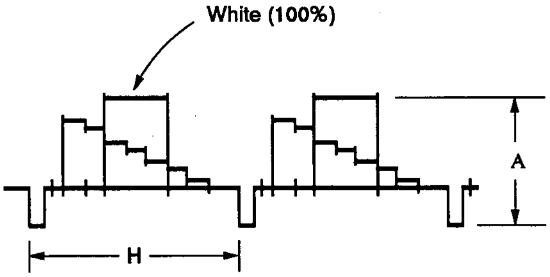


Fig. 9-17.

9. PB Y Level Adjustment (VS-84 board)

Mode	Playback
Signal	Alignment tape: For checking operations Color bar section • Normal mode WR5-5NSP • Hi8 mode WR5-8NSE
Measurement Point	Pin ⑮ of IC401 (JL435)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	• Normal mode 59 (PB YL) • Hi8 mode 58 (PB YE)
Specified Value	A=0.50 ± 0.025V

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Playback the color bar section of the normal mode alignment tape (WR5-5NSP).
3) Change the data of page: D, address: 59, and adjust so that the Y signal level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.
5) Playback the color bar section of the Hi8 mode alignment tape (WR5-8NSE).
6) Change the data of page: D, address: 58, and adjust so that the Y signal level (A) becomes the specified value.
7) Press the PAUSE button of the adjusting remote control unit.

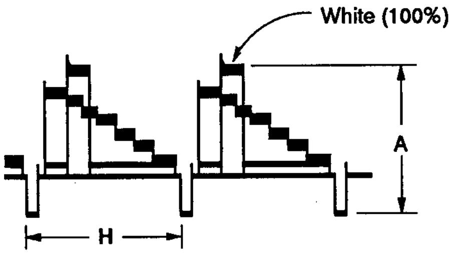


Fig. 9-18.

10. PB LINE OUT Level Adjustment

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-8NSP) Color bar section
Measurement Point	Pin ⑭ of W304
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	5B (PB LINE LEVEL)
Specified Value	A=1.0 ± 0.025V

Note 1: Insert the plug into the S VIDEO input/output terminal.

2: Terminate the Y signal terminal of the S VIDEO input/output terminal at 75Ω .

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 5B, and adjust so that the video signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

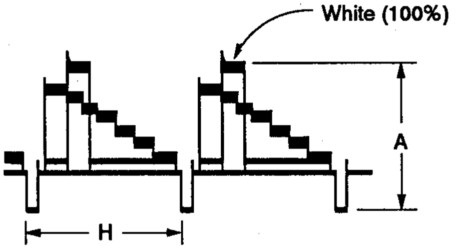


Fig. 9-19.

11. Normal Mode Y FM Carrier Frequency Adjustment (VS-84 board)

Mode	E-E
Signal	No signal
Measurement Point	Pin ㊸ of IC401 (Y RF OUT) (JL428)
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	4F (CAR.-L)
Specified Value	4.37 ± 0.04 MHz

Adjusting method:

1) Insert a MP type tape.
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Change the data of page: D, address: 4F, and adjust so that the Y FM carrier frequency becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

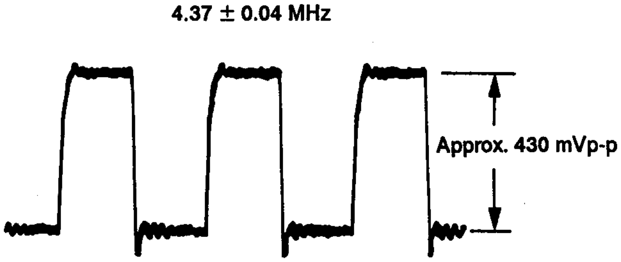


Fig. 9-20.

12. Normal Mode Y FM Deviation Adjustment (VS-84 board)

Mode	Record and playback
Signal	Color bar (S VIDEO)
Measurement Point	Pin ⑮ of IC401 (JL435)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	51 (DEV.-L)
Specified Value	A=0.50 ± 0.025V

Note: Check that "Emphasis Input Level Adjustment", and "PB Y Level Adjustment" have been completed.

Adjusting method:

1) Insert a MP type tape.
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Record the color bar signal.
4) Playback the recorded signal.
5) Check the playback signal level (A).
   Specification:A=0.50 ± 0.01V
6) If the specification is not satisfied, change the data of page: D, address: 51, and repeat steps 3) to 5).

Playback signal level	Changing the data
When smaller than the specified value	Increase
When bigger than the specified value	Decrease

7) Press the PAUSE button of the adjusting remote control unit.
8) Perform "Normal Mode Y FM Carrier Frequency Adjustment".

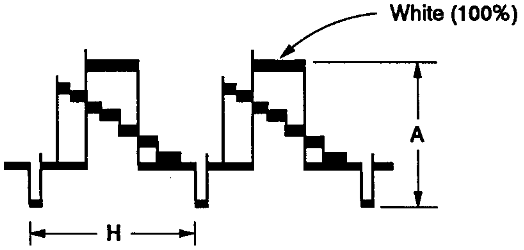


Fig. 9-21.

13. Hi8 Mode Y FM Carrier Frequency Adjustment (VS-84 board)

Mode	E-E
Signal	Non signal
Measurement Point	Pin ㊸ of IC401 (Y RF OUT) (JL428)
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	4E (CAR.–E)
Specified Value	5.98 ± 0.04 MHz

Adjusting method:

1) Insert a ME type tape, and check that the "Hi8" switch is at "Auto".
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Change the data of page: D, address: 4E, and adjust so that the Y FM carrier frequency becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

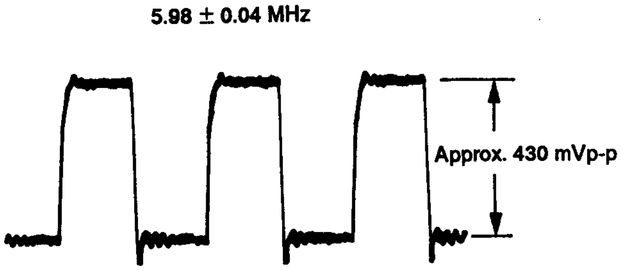


Fig. 9-22.

14. Hi8 Mode Y FM Deviation Adjustment (VS-84 board)

Mode	Record and playback
Signal	Color bar (S VIDEO)
Measurement Point	Pin ⑮ of IC401 (JL435)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	50 (DEV.–E)
Specified Value	A=0.50 ± 0.025V

Note: Check that "Emphasis Input Level Adjustment" and "PB Y Level Adjustment" have been completed.

Adjusting method:

1) Insert a ME type tape, and check that the "Hi8" switch is at "Auto".
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Record the color bar signal.
4) Playback the recorded signal.
5) Check the playback signal level (A).
   Specification: A=0.50 ± 0.01V
6) If the specification is not satisfied, change the data of page: D, address: 50, and repeat steps 3) to 5).

Playback signal level	Changing the data
When smaller than the specified value	Increase
When bigger than the specified value	Decrease

7) Press the PAUSE button of the adjusting remote control unit.
8) Perform "Hi8 Mode Y FM Carrier Frequency Adjustment".

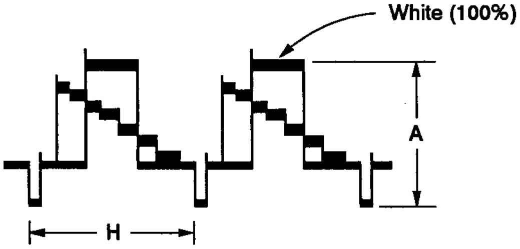


Fig. 9-23.

15. Chroma Emphasis fo Adjustment (VS-84 board)

Mode	Record
Signal	Color bar (VIDEO)
Measurement Point	Pin ㉔ of IC501 (JL504)
Measuring Instrument	Oscilloscope
Adjustment Element	FL502
Specified Value	Minimum fo component

Adjusting method

1) Adjust FL502 so that the amplitude of the latter section of the chroma signal (yellow section) becomes minimum.

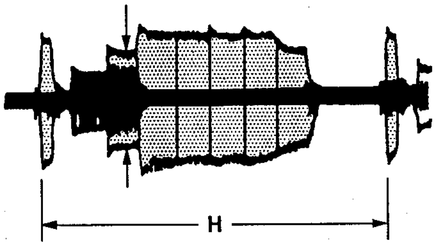

Minimize the amplitude of the latter section of the yellow section.

Fig. 9-24.

16. REC C RF Level Adjustment (VS-84 board)

Mode	Record
Signal	Color bar (VIDEO)
Measurement Point	Pin ③ of IC503 (REC C RF) (JL427)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	46 (REC C RF)
Specified Value	A=120 ± 5 mVp-p

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 46, and adjust so that the amplitude (A) of the flat part of the chroma signal (red) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

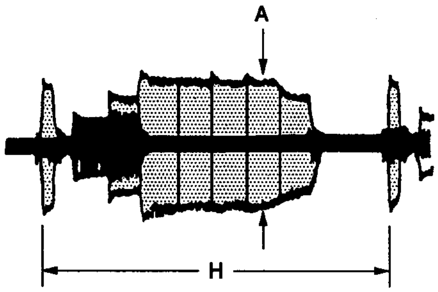


Fig. 9-25.

17. REC Y Level Adjustment (VS-84 board)

Mode	Record
Signal	No signal
Measurement Point	Pin (80) of IC001 (REC Y RF)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	52 (REC Y CONT (ME E)) 53 (REC Y CONT (MP E)) 54 (REC Y CONT (ME L)) 55 (REC Y CONT (MP L))
Specified Value	A=250 ± 5 mVp-p

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01

- ME tape Hi8 mode (ME E mode) adjustment

2) Insert the ME tape, and set the record mode.
3) Check that the Hi8 switch is at "Auto".
4) Change the data of page: D, address: 52, and adjust so that REC Y level (A) becomes the specified value.
5) Press the PAUSE button of the adjusting remote control unit.

- Hi8 MP tape Hi8 mode (MP E mode) adjustment

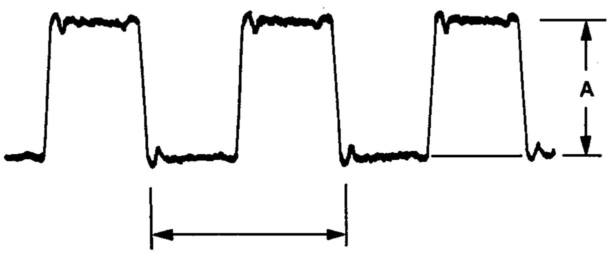
6) Insert the Hi8 MP tape, and set the record mode.
7) Check that the Hi8 switch is at "Auto".
8) Change the data of page: D, address: 53, and adjust so that the REC Y level (A) becomes the specified value.
9) Press the PAUSE button of the adjusting remote control unit.

- ME tape normal mode (ME L mode) adjustment

10) Turn the Hi8 switch off.
11) Insert the ME tape, and set the record mode.
12) Change the data of page: D, address: 54, and adjust so that the REC Y level (A) becomes the specified value.
13) Press the PAUSE button of the adjusting remote control unit.
14) Adjust the Hi8 switch to "Auto".

- MP tape normal mode (MP L mode) adjustment

15) Insert the MP tape, and set the record mode.
16) Change the data of page: D, address: 55, and adjust so that the REC Y level (A) becomes the specified value.
17) Press the PAUSE button of the adjusting remote control unit.



Hi8 (E) mode: Approx. 0.17 μsec
Normal (L) mode: Approx. 0.23 μsec

Fig. 9-26.

18. REC L CONT Adjustment (FP-484 board)

Mode	Record
Signal	Color bar
Measurement Point	Pin ⑦ of CN002 (REC 1a)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	5C (REC L CONT (ME E)) 5D (REC L CONT (MP E)) 5E (REC L CONT (ME L)) 5F (REC L CONT (MP L))
Specified Value	ME tape Hi8 mode (ME E) A=50 ± 2 mVp-p Hi8 MP tape Hi8 mode (MP E) A=33.5 ± 2 mVp-p ME tape normal mode (ME L) A=50 ± 2 mVp-p MP tape normal mode (MP L) A=42 ± 2 mVp-p

Connection
1) Remove the AU-118 board CN603.
2) Connect the contact point of R178 and R176 (near pin ㊽ of IC153) to the GND with a 0.01 μF capacitor (1-101-004-00).

Adjusting method:
1) Release the protect.
   Page: 1, address: 00, data: 00
2) After memorizing each data of address: 52 to address: 55 of page: D, set data: 00 to each address.
   (Minimizing the REC Y RF level)
- ME tape Hi8 mode (ME E mode) adjustment
3) Insert the ME tape, and set the record mode.
4) Check that the Hi8 switch is at "Auto".
5) Change the data of page: D, address: 5C, and adjust so that REC C RF level (A) becomes the specified value.
6) Press the PAUSE button of the adjusting remote control unit.
- Hi8 MP tape Hi8 mode (MP E mode) adjustment
7) Insert the Hi8 MP tape, and set the record mode.
8) Check that the Hi8 switch is at "Auto".
9) Change the data of page: D, address: 5D, and adjust so that the REC C RF level (A) becomes the specified value.
10) Press the PAUSE button of the adjusting remote control unit.
- ME tape normal mode (ME L mode) adjustment
11) Turn the Hi8 switch off.
12) Insert the ME tape, and set the record mode.
13) Change the data of page: D, address: 5E, and adjust so that the REC C RF level (A) becomes the specified value.
14) Press the PAUSE button of the adjusting remote control unit.
15) Adjust the Hi8 switch to "Auto".
- MP tape normal mode (MP L mode) adjustment
16) Insert the MP tape, and set the record mode.
17) Change the data of page: D, address: 5F, and adjust so that the REC C RF level (A) becomes the specified value.
18) Press the PAUSE button of the adjusting remote control unit.
- Processing after adjustments
19) Set the data memorized at step 2) to each address from address: 52 to address: 55 of page: D. and press the PAUSE button of the adjusting remote control unit.

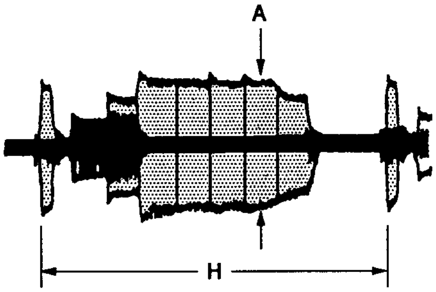


Fig. 9-27.

19. REC C Preset Adjustment (FP-484 board)

Mode	Record
Signal	Color bar
Measurement Point	CH1 (1:1 probe) CH1a: Pin ⑦ of CN002 CH2a: Pin ⑧ of CN002 CH1b: Pin ⑤ of CN002 CH2b: Pin ⑥ of CN002 CH2 (10: 1 probe) Video input/output terminal
Measuring Instrument	Oscilloscope TRIGGER SOURCE: CH2
Adjustment Page	D
Adjustment Address	30 (REC C 1A (ME)), 31 (REC C 1A (MP)), 32 (REC C 1B (ME)), 33 (REC C 1B (MP)), 34 (REC C 2A (ME)), 35 (REC C 2A (MP)), 36 (REC C 2B (ME)), 37 (REC C 2B (MP))
Specified Value	A=50 ± 2 mVp-p

Note: Use a ME type tape, and check that the "Hi8" switch is at "Auto".

Connection:
1) Remove the AU-118 board CN603.
2) Connect the contact point of R178 and R176 of the VS-84 board (near pin (85) of IC153) to GND with a 0.01 μF capacitor (1-101-004-00).

Adjusting method:
1) Release the protect.
   Page: 1, address: 00, data: 01
2) After memorizing the data of page: D, address: 52, set data: 00. (Minimizing the REC Y RF level)
3) Connect CH1 probe of the oscilloscope to pin ⑦ of CN002 (REC 1a).
4) Change the data of page: D, address: 30, and adjust so that the CH1a REC C level (A) becomes the specified value.
5) Press the PAUSE button of the adjusting remote control unit.
6) Adjust each REC C LEVEL of CH2a (address: 34), CH1b (address: 32) and CH2b (address: 36) in the same way.
7) Set data to address: 31, 33, 35, 37 of page: D as shown in the following table. (Be sure to press the PAUSE button of the adjusting remote control unit after setting each data.)

Address	Data
31	Same data as address: 30
33	Same data as address: 32
35	Same data as address: 34
37	Same data as address: 36

8) Set the data memorized at step 2) to page: D, address: 52, and press the PAUSE button of the adjusting remote control unit.

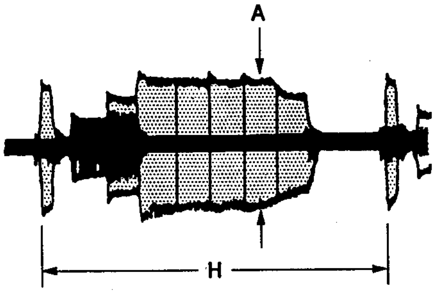


Fig. 9-28.

20. REC ATF Level Check (FP-484 board)

Mode	Record
Signal	No signal
Measurement Point	CH1a: (CN002 ⑦), CH2a: (CN002 ⑧), CH1b: (CN002 ⑤), CH2b: (CN002 ⑥)
Measuring Instrument	Oscilloscope
Specified Value	A=12.7 ± 2.0 mVp-p

Note: Use a MP type tape, and check that the "Hi8" switch is at "Auto".

Connection:
1) Remove the AU-118 board CN603.

Checking method:
1) Release the protect.
   Page: 1, address: 00, data: 01.
2) After memorizing the data of page: D, address: 52, set data: 00. (Minimizing the REC Y RF level)
3) Check that the REC ATF signal level (A) satisfies the specified value for each channel from CH1a to CH2a.
4) Set the data memorized at step 2) to page: D, address: 52, and press the PAUSE button of the adjusting remote control unit.

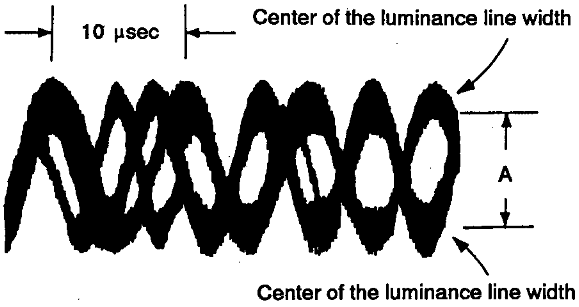

10 μsec
Center of the luminance line width
A
Center of the luminance line width

Fig. 9-29.

21. Chroma Flicker Check and Adjustment (VS-84 board)

Mode	Self recording/playback
Signal	Color bar
Measurement Point	CH-1 (1: 1 probe): Pin ㊷ of IC501 of VS-84 board (PBC RF IN) CH-2 (10: 1 probe): Pin ⑩ of CN002 of FP-484 board ($\overline{\text{1/2 RF SWP}}$)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment address	30 (REC C 1A (ME)), 31 (REC C 1A (MP)), 32 (REC C 1B (ME)), 33 (REC C 1B (MP)), 34 (REC C 2A (ME)), 35 (REC C 2A (MP)), 36 (REC C 2B (ME)), 37 (REC C 2B (MP))
Specified Value	$\frac{Vc1a}{Vc1b} \times 100 = 100^{+12}_{-11}$ (%) $\frac{Vc2a}{Vc2b} \times 100 = 100^{+12}_{-11}$ (%)

Note 1: Check that "REC C Preset Adjustment", and "REC ATF Level Check" have been completed.

2: Use a ME type tape and check that the "Hi8" switch is at "Auto".

Checking method:

1) Record the color bar signal.
2) Playback the recorded section.
3) Adjust each playback level of channels 1a, 1b, 2a, 2b to Vc1a, Vc1b, Vc2a, Vc2b respectively.
4) Check that the specified values have been satisfied. If not, perform the following adjustments.

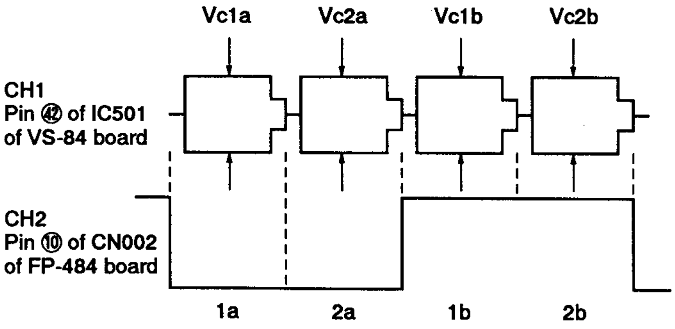


Fig. 9-30.

Adjusting method:

1) If the specifications are not satisfied, calculate the following values from the measuring values.

$\Delta Vc1 = |Vc1a - Vc1b|/2$

$\Delta Vc2 = |Vc2a - Vc2b|/2$

Note: | | is the absolute value.

2) The smaller value when the playback levels are Vc1a, Vc1b is

$$\left\{\frac{\text{(The smaller value of Vc1a and Vc1b)} + \Delta Vc1}{\text{(The smaller value of Vc1a and Vc1b)}}\right\} \times 50 \text{ (mVp-p)}$$

The greater value when the playback values are Vc1a, Vc1b is

$$\left\{\frac{\text{(The greater value of Vc1a and Vc1b)} - \Delta Vc1}{\text{(The greater value of Vc1a and Vc1b)}}\right\} \times 50 \text{ (mVp-p)}$$

The smaller value when the playback levels are Vc2a, Vc2b is

$$\left\{\frac{\text{(The smaller value of Vc2a and Vc2b)} + \Delta Vc2}{\text{(The smaller value of Vc2a and Vc2b)}}\right\} \times 50 \text{ (mVp-p)}$$

The greater value when the playback values are Vc2a, Vc2b is

$$\left\{\frac{\text{(The greater value of Vc2a and Vc2b)} - \Delta Vc2}{\text{(The greater value of Vc2a and Vc2b)}}\right\} \times 50 \text{ (mVp-p)}$$

3) Perform [REC C Preset Adjustment] with the value calculated from Vc1a, Vc1b, Vc2a, Vc2b at step 2), as the specified value for 1a, 1b, 2a, and 2b.
4) After the adjustment, perform "Chroma Flicker Check" again, and repeat the adjustment until the specified value is satisfied.

22. REC ATF Level Check (FP-484 board)

Mode	Record
Signal	No signal
Measurement Point	CH1a: (CN002 ⑦), CH2a: (CN002 ⑧), CH1b: (CN002 ⑤), CH2b: (CN002 ⑥)
Measuring Instrument	Oscilloscope
Specified Value	A=18.0 ± 2.5 mVp-p

Note 1: Use a MP type tape, and check that the "Hi8" switch is at "Auto".

2: Do not insert anything into the audio input terminal (right). (Monaural record mode)

Connection:

1) Connect the contact point of R178 and R176 of the VS-84 board (near Pin (85) of IC153) to GND with a 0.01 μF capacitor (1-101-004-00).

Checking method:

1) Release the protect.
   Page: 1, address: 00, data: 01.
2) After memorizing the data of page: D, address: 52, set data: 00. (Minimizing the REC Y RF level)
3) Check that the REC AFM signal level (A) satisfies the specified value, for each channel from CH1a to CH2a.
4) Set the data memorized at step 2) to page: D, address: 52, and press the PAUSE button of the adjusting remote control unit.

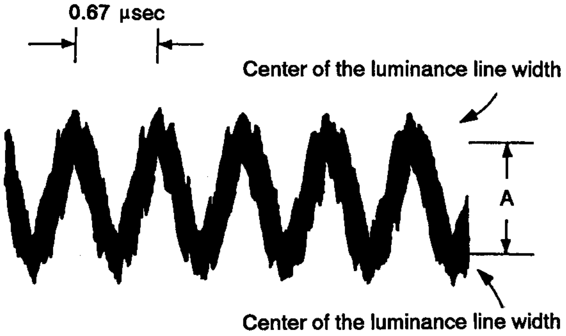


Fig. 9-31.

23. YD Adjustment (VS-84 board)

Mode	Playback
Signal	Color bar tape with dropout (Note 1)
Measurement Point	Video input/output terminal
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	66 (YD ADJ)
Specified Value	Dropout section should be flat

Note 1: A tape with continuous dropout is made by scratching the magnetic section of a color bar tape which is running with the tip of a precision driver.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 66, and flatten the dropout section.
3) Press the PAUSE button of the adjusting remote control unit.

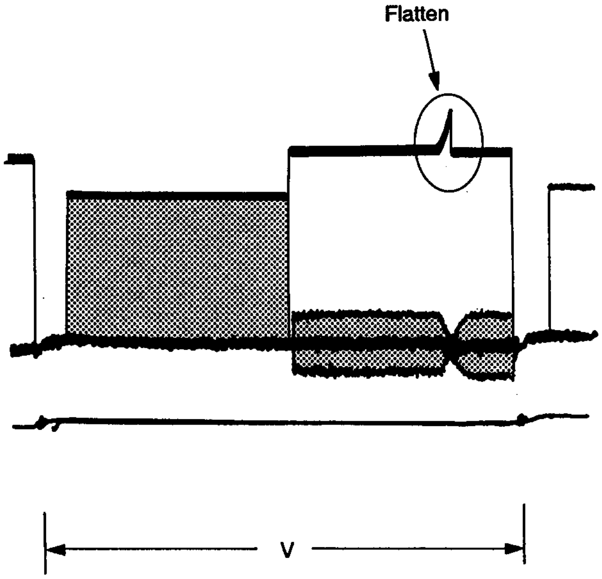


Fig. 9-32.

9-6. INDEX MARKER SYSTEM ADJUSTMENT

1. Playback VCO Free Oscillation Frequency Adjustment (VS-84 board)

Mode	Playback
Signal	Arbitrary tape
Measurement Point	Pin ⑧ of IC261
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	7F (INDEX VCO)
Specified Value	11.35 ± 0.05 MHz

Note: Connect the frequency counter via a high impedance and low capacity buffer amplifier (oscilloscope, etc.).

Connection:
1) Connect Pins ① and ⑥ of IC261 with a jumper wire.
2) Connect the Q264 collector and GND with a jumper wire.

Adjusting method:
1) Release the protect.
Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 7F, and adjust the oscillation frequency to the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

2. REC PCM Level Check (VS-84 board)

Mode	Record
Signal	Arbitrary
Measurement Point	Pin ② of IC001
Measuring Instrument	Oscilloscope
Specified Value	A=250 ± 100 mVp-p

Checking method:
1) Check that the REC ATF level (A) satisfies the specified value.

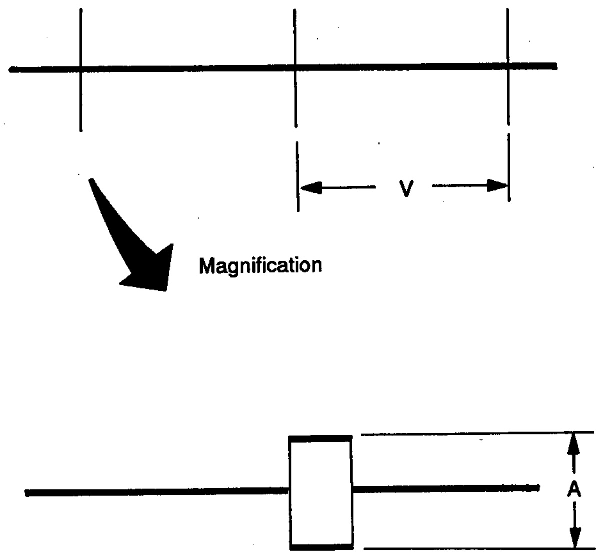


Fig. 9-33.

9-7. AUDIO SYSTEM ADJUSTMENT

- Perform the adjustment using the color bar signal as a video signal input.
- Unless specified otherwise, use a Hi8 ME tape.

[Connecting the measuring instruments for the audio]

Connect the audio system measuring instruments in addition to the video system measuring instruments as shown in Fig. 9-34, and perform adjustments at the power switch [video] position.
Switch the input/output switchover switch in accordance with the mode as follows.

- Recording mode····Input position
- Playback mode ·····Output position

Adjust the Hi-Fi switch (CF-29 board S201) to the following position unless specified otherwise.

- Green (stereo) position

Note: 1) When inputting the audio signal, input the same signal to both L, and R channels, unless specified otherwise.

2) Be sure to insert the plug (shorting plug or dummy plug, etc.) into the audio input/output terminal (right). If the plug is not inserted, the unit will be set into the monaural mode, and correct adjustments cannot be carried out.
(Monaural mode)
During recording ·· REC AFM RF1.7 MHz carrier will not be output.
During playback ·· The L+R signal will be output from the audio input/output terminal (left).

3) The items to be adjusted for the R channel will be indicated within the [ ], in regard to the adjusting items to be adjusted for both L and R channels.

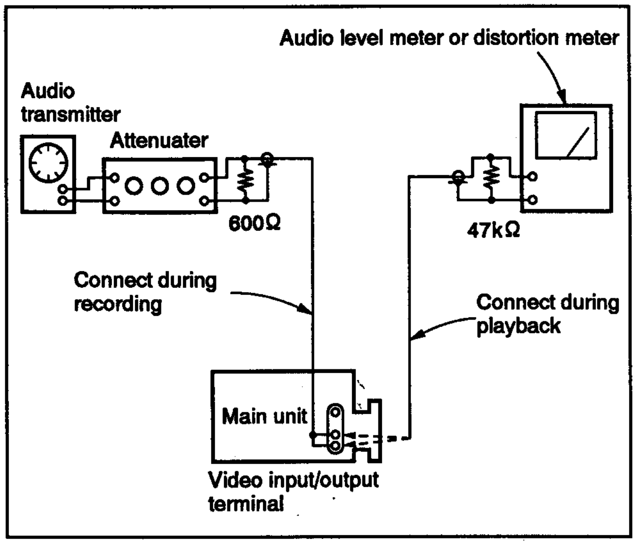


Fig. 9-34.

[Adjustment Procedure]

1) 1.5 MHz carrier frequency check
2) 1.7 MHz carrier frequency check
3) 1.5 MHz recording level check
4) 1.7 MHz recording level check
5) E-E output level check
6) REC matrix L–R check
7) REC matrix L+R check
8) IR adjustment
9) 1.5 MHz deviation adjustment
10) 1.7 MHz deviation adjustment
11) PB matrix L adjustment
12) PB matrix R adjustment
13) Overall level characteristics, distortion check
14) Separation check
15) Overall noise level check

1. 1.5 MHz Carrier Frequency Check (AU-118 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ⑧ of IC601
Measuring Instrument	Frequency counter (Note 1)
Specified Value	1.500 ± 0.002 MHz

Note: Use a high impedance (above 1 MΩ) and low capacity (below 20 pF) probe.

Checking method:
1) Check that the 1.5 MHz carrier frequency satisfies the specified value.

2. 1.7 MHz Carrier Frequency Check (AU-118 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ⑧ of IC602
Measuring Instrument	Frequency counter (Note 1)
Specified Value	1.700 ± 0.002 MHz

Note: 1) Use a high impedance (above 1 MΩ) and low capacity (below 20 pF) probe.
2) Insert a shorting plug into the audio input terminal (right).

Checking method:
1) Check that the 1.7 MHz carrier frequency satisfies the specified value.

3. 1.5 MHz Record Level Check (AU-118 board)

Mode	Record (Monaural)
Signal	No signal
Measurement Point	Pin ② of CN603 (REC AFM)
Measuring Instrument	Oscilloscope
Specified Value	A=23 ± 3 mVp-p

Note: Do not insert the plug into the audio input terminal (right).

Checking method:
1) Check that the 1.5 MHz carrier level satisfies the specified value.
(Read the center of the luminance line width and note down the level read.)

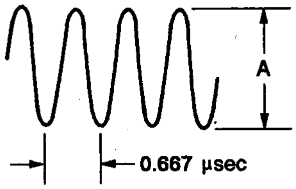


Fig. 9-35.

4. 1.7 MHz Record Level Check (AU-118 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ② of CN603 (REC AFM)
Measuring Instrument	Oscilloscope
Specified Value	$\frac{\text{1.7 MHz carrier level}}{\text{1.5 MHz carrier level}}$ =0.80 ± 0.12

Note: Insert a shorting plug into the audio input terminal (right).

Connection:
1) Remove and check C689 (0.01 μF). After checking, connect a new capacitor.

Checking method:
1) Check that the level ratio of 1.5 MHz carrier and 1.7 MHz carrier satisfies the specified value.

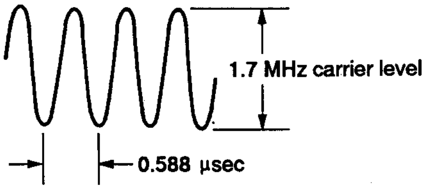


Fig. 9-36.

5. E-E Output Level Check (AU-118 board)

Mode	Record
Signal	400 Hz, –7.5 dBs audio input terminal right [left]
Measurement Point	Pin ⑨ of IC604 [Pin ① of IC604]
Measuring Instrument	Oscilloscope
Specified Value	925^{+240}_{-190} mVp-p (–7.5 ± 2 dBs)

Checking method:

1) Check that the 400 Hz signal level satisfies the specified value.

6. REC Matrix L-R Adjustment (AU-118 board)

Mode	Record
Signal	400 Hz, –7.5 dBs Input to both left and right terminals of the audio input terminal
Measurement Point	Pin ㉛ of IC602
Measuring Instrument	Oscilloscope (Use 1:1 probe)
Adjustment Page	D
Adjustment Address	78 (REC/PB MX (REC))
Specified Value	0 ± 5 mVp-p

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 78, and minimize the 400 Hz signal level.
3) Press the PAUSE button of the adjusting remote control unit.

7. REC Matrix L+R Check (AU-118 board)

Mode	Record
Signal	1. 400 Hz, –7.5 dBs: Audio input terminal left No signal: Audio input terminal right 2. No signal: Audio input terminal left 400 Hz, –7.5 dBs: Audio input terminal right
Measurement Point	Pin ㉛ of IC601
Measuring Instrument	Oscilloscope
Specified Value	The level difference is 0 ± 10 mVp-p when only the left terminal is input and when only the right terminal is input.

Note: When measuring the signal level of pin ㉛ of IC601, wait for more than 1 minute after signal input before measuring. (To stabilize the AGC)

Adjusting method:

1) Input the 400 Hz, –7.5 dBs signal only to the audio input terminal (left). (Insert the shorting plug to the audio input terminal (right).)
2) Read the 400 Hz signal level of pin ㉛ of IC601, and take it down. (Approximately 200 mVp-p)
3) Input the 400 Hz, –7.5 dBs signal only to the audio input terminal (right). (Insert the shorting plug to the audio input terminal (left).)
4) Check that the 400 Hz signal level of pin ㉛ of IC601 is (the value that was taken down at step 2) ± 10 mVp-p.

8. IR Adjustment (AU-118 board)

Mode	Playback
Signal	Alignment tape: AFM stereo For checking operations (WR5-9NS)
Measurement Point	Pins ㊹ and ⑥ of IC601 (1.5 MHz IR) Pins ㊹ and ⑥ of IC602 (1.7 MHz IR)
Measuring Instrument	Digital voltmeter
Adjustment Page	D
Adjustment Address	7A (1.5 IR), 7C (1.7 IR)
Specified Value	The DC voltage difference between pins ㊹ and ⑥ is 0 ± 10 mVdc

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
- 1.5 MHz IR adjustment
2) Connect the digital voltmeter to pin ㊹ of IC601, and read the voltage. (Approximately 2100 mVdc)
3) Connect the digital voltmeter to pin ⑥ of IC601.
4) Change the data of page: D, address: 7A, and adjust so that the voltage of pin ⑥ of IC601 becomes equal to the voltage of pin ㊹. (Voltage difference below 10 mVdc)
5) Press the PAUSE button of the adjusting remote control unit.
- 1.7 MHz IR adjustment
6) Connect the digital voltmeter to pin ㊹ of IC602, and read the voltage. (Approximately 2100 mVdc)
7) Connect the digital voltmeter to pin ⑥ of IC602.
8) Change the data of page: D, address: 7C, and adjust so that the voltage of pin ⑥ of IC602 becomes equal to the voltage of pin ㊹. (Voltage difference below 10 mVdc)
9) Press the PAUSE button of the adjusting remote control unit.

9. 1.5 MHz Deviation Adjustment

Mode	Playback
Signal	Alignment tape: For checking the operation (WR5-5NSP)
Measurement Point	Audio output terminal left or right
Measuring Instrument	Oscilloscope, Level meter
Adjustment Page	D
Adjustment Address	7B (1.5 DEV)
Specified Value	–7.5 ± 0.5 dBs

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 7B, and adjust so that the 400 Hz signal level becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

10. 1.7 MHz Deviation Adjustment (AU-118 board)

Mode	Playback
Signal	Alignment tape: AFM stereo For checking operations (WR5-9NS) Bilingual (Monoscope) section
Measurement Point	1. Pin ⑨ of IC604 2. Pin ① of IC604
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	7D (1.7 DEV)
Specified Value	8 ± 0.05 graduation

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Connect the oscilloscope to pin ⑨ of IC604.
3) Adjust the 400 Hz signal amplitude to the 8.0 graduation using the VOLT/DIV knob of the oscilloscope.
4) Connect the oscilloscope to pin ① of IC604.
5) Change the data of page: D, address: 34, and adjust so that the 1 kHz signal level becomes 8 ± 0.05 graduation. (Adjust with the center of the luminance line width.)
6) Press the PAUSE button of the adjusting remote control unit.

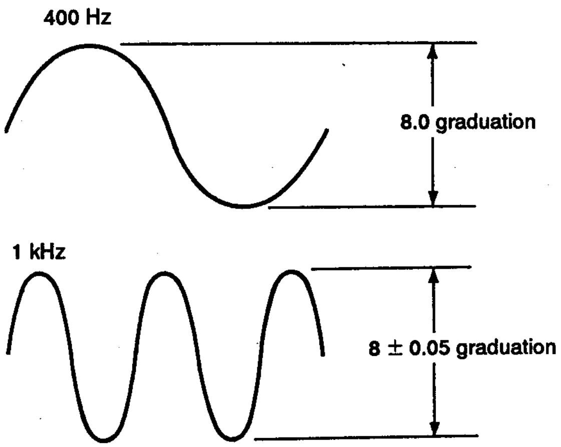


Fig. 9-37.

11. PB Matrix L Adjustment

Mode	Self recording/playback
Signal	No signal: Audio input terminal (left) 400 Hz, –7.5 dBs: Audio input terminal (right)
Measurement Point	Pin ⑨ of IC604
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	79 (REC/PB MX (PB))
Specified Value	Below 20 mVp-p

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Input the 400 Hz, –7.5 dBs signal only to the audio input terminal (right). (Insert the shorting plug to the audio input terminal (left).)
3) Record.
4) Remove the input signal.
5) Playback the recorded section.
6) Change the data of page: D, address: 79, and minimize the cross talk component (400 Hz).
7) Press the PAUSE button of the adjusting remote control unit.

12. PB Matrix R Check

Mode	Self recording/playback
Signal	400 Hz, –7.5 dBs: Audio input terminal (left) No signal: Audio input terminal (right)
Measurement Point	Pin ① of IC604
Measuring Instrument	Oscilloscope
Specified Value	Below 30 mVp-p

Checking method:

1) Input the 400 Hz, –7.5 dBs signal only to the audio input terminal (left). (Insert the shorting plug to the audio input terminal (right).)
2) Record.
3) Remove the input signal.
4) Playback the recorded section.
5) Check that the cross talk component (400 Hz) is below 30 mVp-p.

13. Overall Level Characteristics, Distortion Check

Mode	Self recording/playback
Signal	400 Hz, –7.5 dBs: Audio input terminal (left) [right] No signal: Audio input terminal (right) [left]
Measurement Point	Audio output terminal (left) [right]
Measuring Instrument	Audio level meter and distortion meter
Specified Value	Level: –7.5 ± 2 dBs Distortion rate: Below 1.5% (Note 2)

Note: 1) The [ ] indicates the measuring point during the right channel check.
2) Value when the 30 kHz low-path filter is used

Checking method:

1) Input the 400 Hz, –7.5 dBs signal only to the audio input terminal (left) [right].
   Note: Be sure to insert the shorting plug to the terminal that was not signal input.
2) Record the signal.
3) Remove the input signal, and adjust the input/output switchover switch to [out].
4) Playback the recorded section.
5) Check that the 400 Hz signal level of the audio output terminal (left) [right] is –7.5 ± 2 dBs, and that the distortion rate is below 1.5% (Note 2).

14. Separation Check

Mode	Self recording /playback
Signal	No signal: Audio input terminal (left) [right] 400 Hz, –7.5 dBs: Audio input terminal (right) [left]
Measurement Point	Audio output terminal (left) [right]
Measuring Instrument	Audio level meter (Use an IHF-A curve auditory correction filter)
Specified Value	Below –27.5 dBs

Note: The [ ] indicates the measuring point during the right channel check.

Checking method:

1) Insert a shorting plug into the audio input terminal (left) [right], and input a 1kHz, –7.5 dBs signal only to the audio input terminal (right) [left].
2) Record the signal.
3) Remove the input signal, and adjust the input/output switchover switch to [out].
4) Playback the recorded section.
5) Check that the cross talk level (1 kHz) of the audio output terminal (left) [right] is below –27.5 dBs.

15. Overall Noise Level Check

Mode	Self recording
Signal	No signal: Audio input terminal left and right
Measurement Point	Audio output terminal (left) [right]
Measuring Instrument	Audio level meter (Use an IHF-A curve auditory correction filter)
Specified Value	Below –62.5 dBs

Note: The [ ] indicates the measuring point during the right channel check.

Checking method:

1) Insert the shorting plug to both left and right of the audio input terminals.
2) Record.
3) Remove the shorting plug, and adjust the input/output switchover switch to [out].
4) Playback the recorded section.
5) Check that the noise level of the audio output terminal (left) [right] is below –62.5 dBs.

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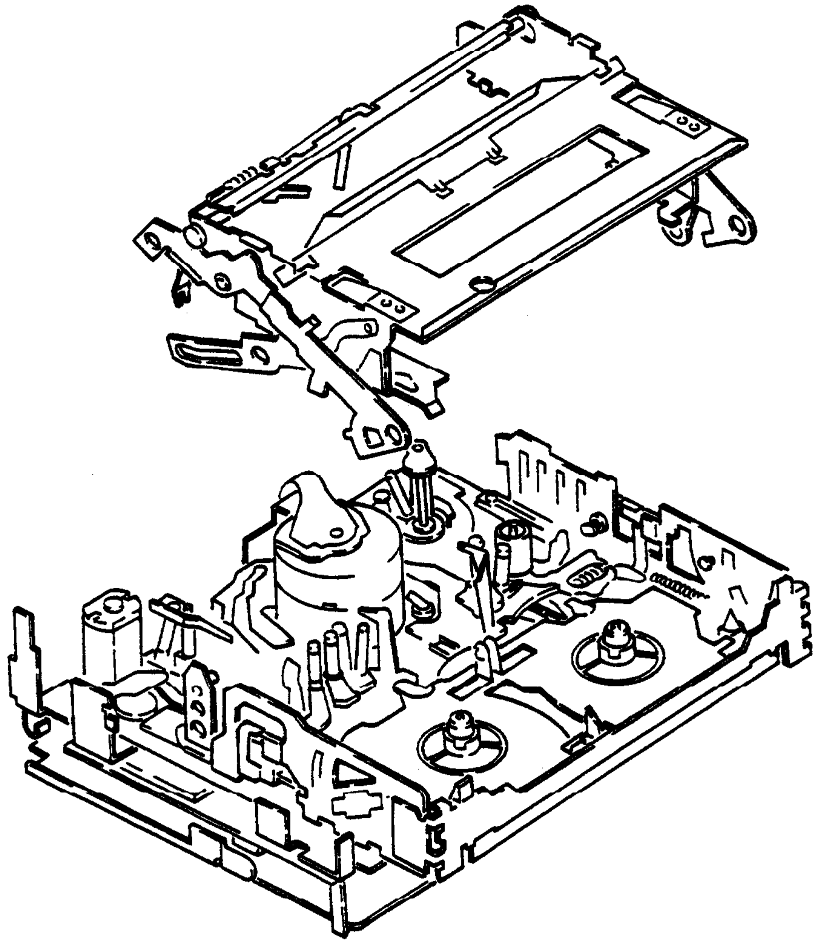
8mm Video MECHANICAL ADJUSTMENT MANUAL II

FL MECHANISM (Q MECHANISM) Video8

File with the SERVICE MANUAL



8 VIDEO RECORDER

SONY®

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1. PREPARATION FOR MECHANICAL CHECK, ADJUSTMENT AND MAINTENANCE

For removal of the cabinet and boards, refer to "Disassembly" in each Service Manual.
Mechanical adjustment is done in the USE mode. (To select the USE mode, refer to "1-4 Handling of Mode Selector".)

1-1 CASSETTE COMPARTMENT HOLDER ASSEMBLY (Fig. 1)

1. Removal

1) Select the USE mode.
2) Remove the screw ●, and then, the LS support ●.
3) Remove the four screws ●, and then, the LS frame assy ●.
4) Remove the three lock washers ●, and then, the washer ●, bar, joint ●, T protector assy ●, and TP arm assy ● in that order.
5) Remove the two screws●, and then, the two arm shafts A●.
6) Remove the shaft through the long hole●. With the cassette compartment holder assembly●rotated in a direction of the arrowⒶ, remove the long holes●and●from the shaft in that order, and then, remove the cassette compartment holder assembly●.
7) Slide the BS holder●in a direction of the arrowⒷ as shown in Fig. A and remove it in a direction of the arrowⒸ.

Note : When this is done, be careful not to drop the steel ball and spring, compression out of the BS holder ●.

2. Mounting

1) Select the USE mode.
2) Mount the BS holder●in the reverse order of its removal.
Note: Refer to Fig. A.
3) Mount the shafts in the order of the long holes ●, ●and● of the cassette compartment holder assembly●, respectively.

Note : When this is done, rotate the cassette compartment holder assembly●in a direction of the arrowⒶ to mount it until the long hole is aligned with the oval shape of the shaft.

4) Align the oval shape of the two arm shafts A●with the long holes of the LS chassis, fit them in firmly and fix with the two screws●.
5) Mount the TP arm assy ●, T protector assy ● and bar, joint ●, respectively. Then, mount the washer ● and three lock washers ●.
6) Mount the LS frame assy ● to the chassis and fix with the four screws ●.
7) Mount the LS support ● to the chassis and fix with the screw ●.

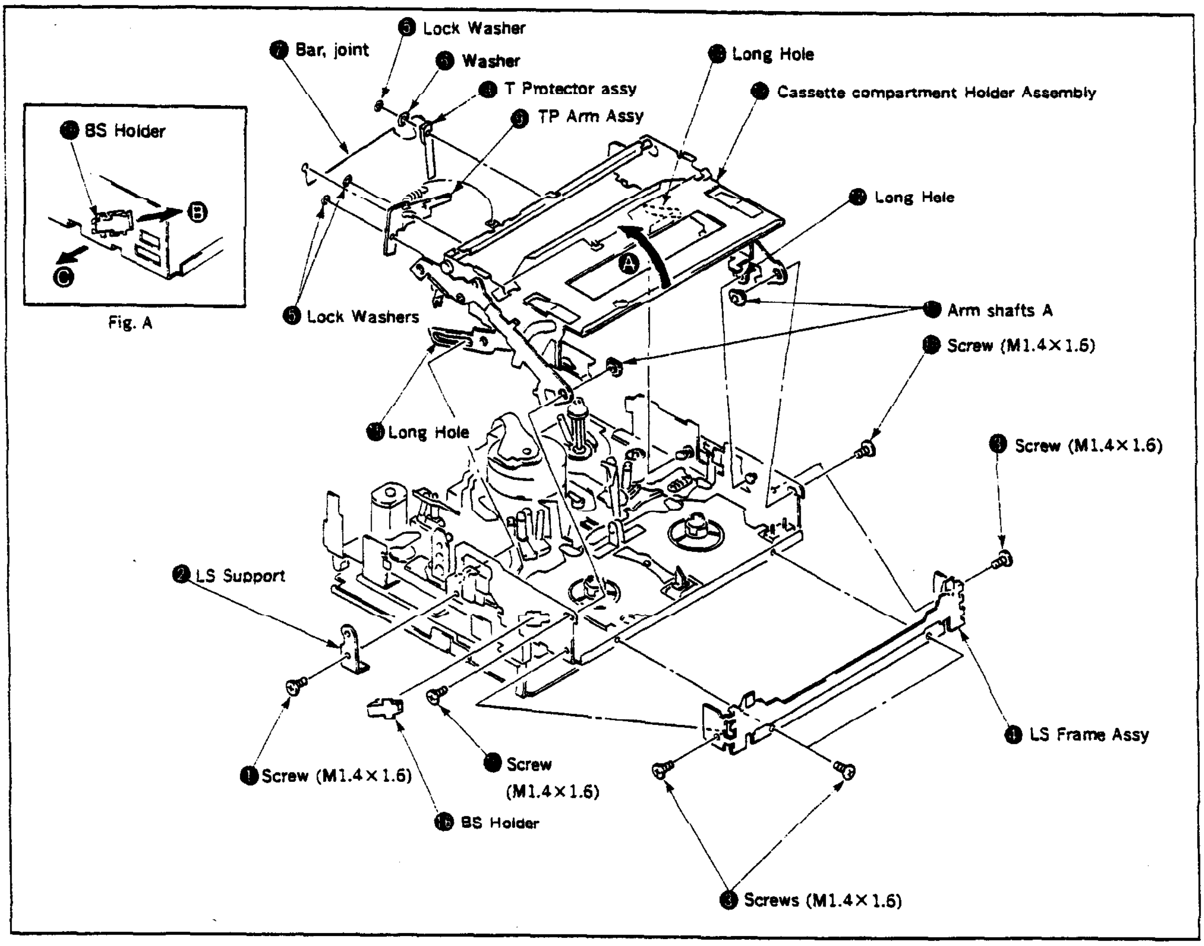

● BS Holder
Ⓑ
Ⓒ
Fig. A
● Lock Washer
● Bar, joint
● Washer
● T Protector assy
● TP Arm Assy
● Long Hole
● Cassette compartment Holder Assembly
● Long Hole
Ⓐ
● Lock Washers
● Arm shafts A
● Screw (M1.4×1.6)
● Long Hole
● Screw (M1.4×1.6)
● LS Support
● LS Frame Assy
● Screw (M1.4×1.6)
● Screw (M1.4×1.6)
● BS Holder
● Screws (M1.4×1.6)

Fig. 1

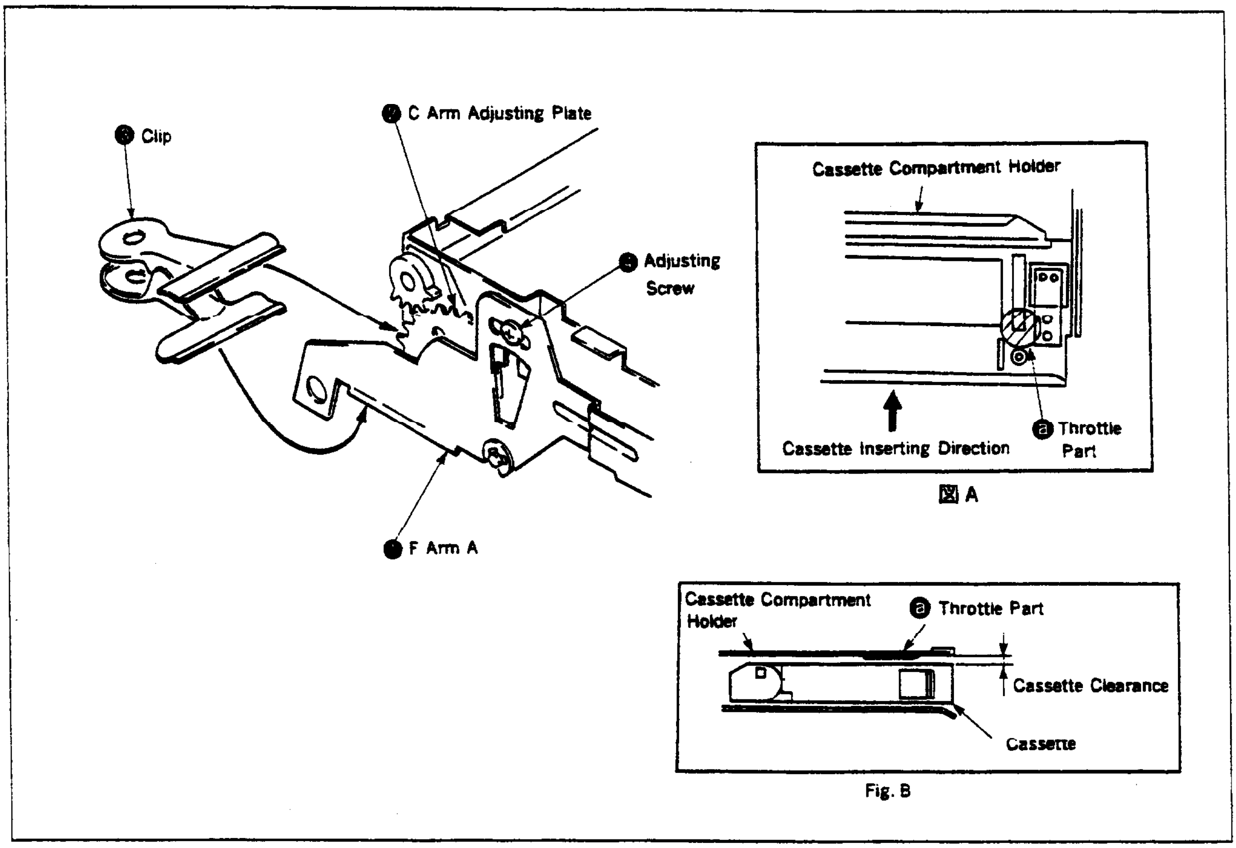
1-2 CASSETTE COMPARTMENT LOCK HEIGHT ADJUSTMENT (Fig. 2)

1) Using a spacer, etc., insert a 15.3mm-thick cassette to lock the cassette compartment.

Note : As shown in Fig. A, a 15.3mm-thick portion may be under the throttle part ⓐ.

2) Pressing the part ⓐ, nip the F arm A ● and the first tooth of the C arm adjusting plate ● with the clip ●, and tighten the adjusting screw ● at a torque of 1kg•cm.

3) Apply Screw Lock to the adjusting screw ● after making sure of the following clearances between the throttle part ⓐ of the cassette compartment holder and the cassette as shown in Fig. B.
   - For 15mm-thick dummy cassette : 0.5 – 0.9
   - For 15.2mm-thick dummy cassette : 0.3 – 0.7


● Clip
● C Arm Adjusting Plate
● Adjusting Screw
● F Arm A
Cassette Compartment Holder
Cassette Inserting Direction
ⓐ Throttle Part
Cassette Compartment Holder
ⓐ Throttle Part
Cassette Clearance
Cassette

図A

Fig. B

Fig. 2

1-3 OPERATION WITH CASSETTE COMPARTMENT HOLDER ASSEMBLY REMOVED

1. Putting into Loading state (Fig. 3)

1) Referring to the Service Manual, supply power with the cabinet and camera section removed. (Make the mechanism deck ready to operate.)
2) Place the cap ● on the LED assembly ●.
3) Press the pin of the push switch ● (ON state) and fix it with adhesive tape ● in that state.
4) Press the locking plate release arm ● in an arrow direction. The set is made ready for loading.

2. Putting into the REC Mode

1) Short the TEST pins (SS-82 board CN404 pins ● and ● for CCD-V11/V88) to place into the TEST mode.

For CCD-V11/V88 ; SS-82 board CN404
TEST pin connector

4	GND
3	$\overline{\text{CAM ADJ}}$
2	$\overline{\text{TEST}}$
1	$\overline{\text{PATH}}$

The set is placed into the TEST mode by shorting the pins ● and ●.

2) After completing the step 1), set the power switch to VTR (or CAMERA).
3) Turn on the REC switch. (If the set is placed in the TEST mode, detection of S and T reel table rotation is disabled and the tape can run.)

3. Putting into EJECT

1) Turn on the EJECT switch.

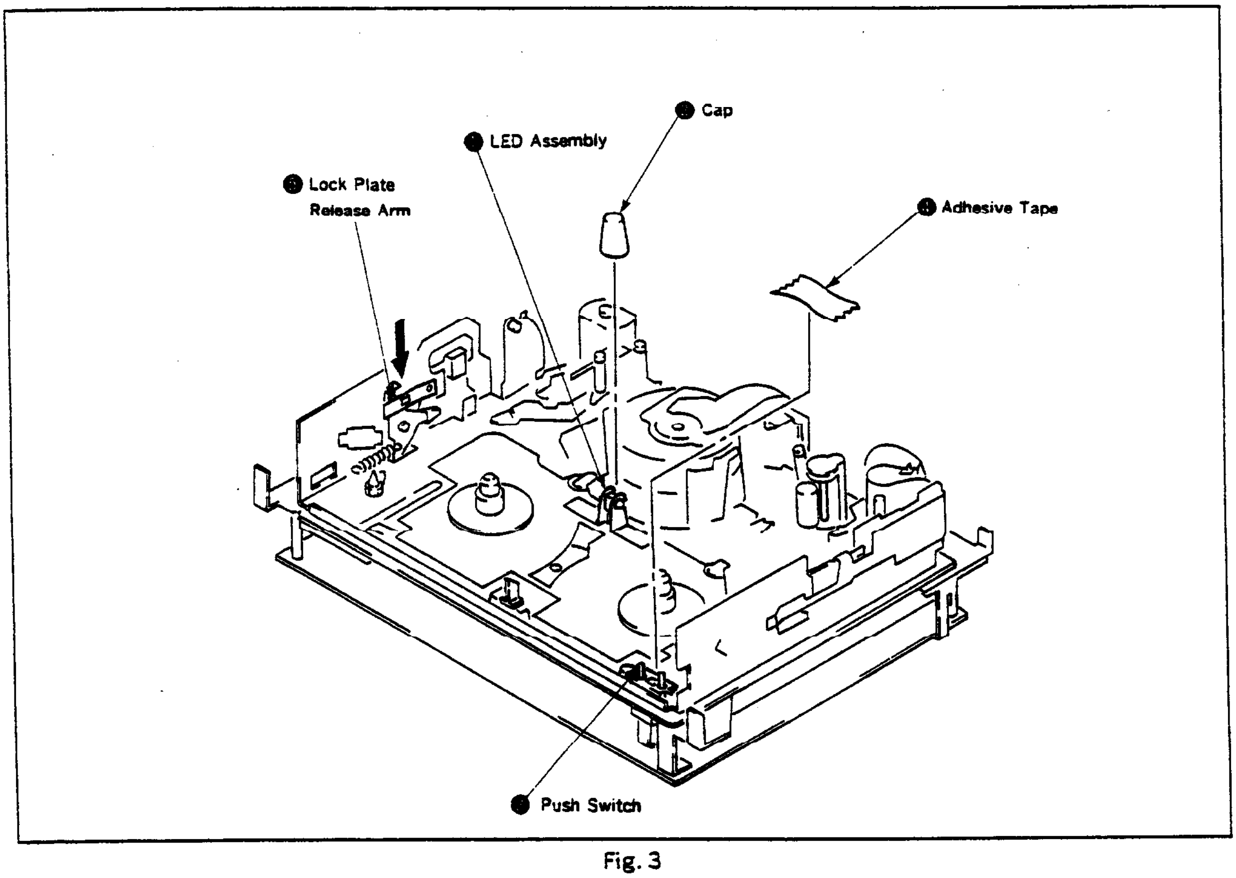


Fig. 3

1-4 HANDLING OF MODE SELECTOR

- Mount the MODE SELECTOR III panel to the mode selector. U, FL, O and O' mechanisms have different mode indications respectively. Select your disired type. (Fig. 4)

1. Construction (Fig. 5)

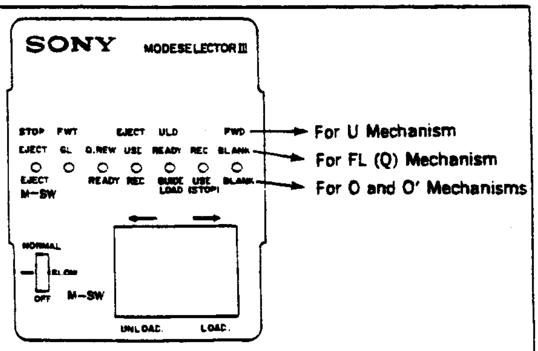
2. Connection (Fig. 6)

For CCD-VII/V88

1) Remove the plate, ornamental ❶.
2) Remove the screw ❷, and then, the LB-12 board ❸.
3) Remove the FP-114 flexible connector ❹ and loading motor connector ❺, and insert them into the MODE SELECTOR III conversion connector respectively.
4) Insert the M-SW connector of the mode selector into the MODE SELECTOR III conversion connector.

3. Handling

1) Use the M mode selector buttons only.
2) During mode selection, "BLANK" lights up when no mode is being selected.
3) If the right M mode selector button is kept pressed, EJECT, USE, GL, Q.REW, GL, REC and READY light up in that order.
4) When changing over from the READY mode back to the EJECT mode, press the left M mode selector button to select your desired mode.


SONY
MODESELECTOR III
STOP FWT EJECT ULD FWD
EJECT GL Q.REW USE READY REC BLANK
EJECT READY REC GUIDE LOAD USE (STOP) BLANK
M-SW
NORMAL
SLOW
OFF
M-SW
UNLOAD.
LOAD.
For U Mechanism
For FL (Q) Mechanism
For O and O' Mechanisms

Ref. No. J-13 MODE SELECTOR III Panel

Fig. 4

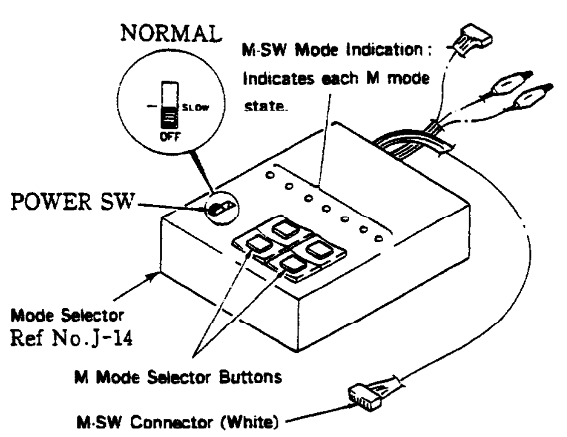

NORMAL
SLOW
OFF
POWER SW
M-SW Mode Indication : Indicates each M mode state.
Mode Selector
Ref No.J-14
M Mode Selector Buttons
M-SW Connector (White)

Fig. 5

For CCD-V11/V88

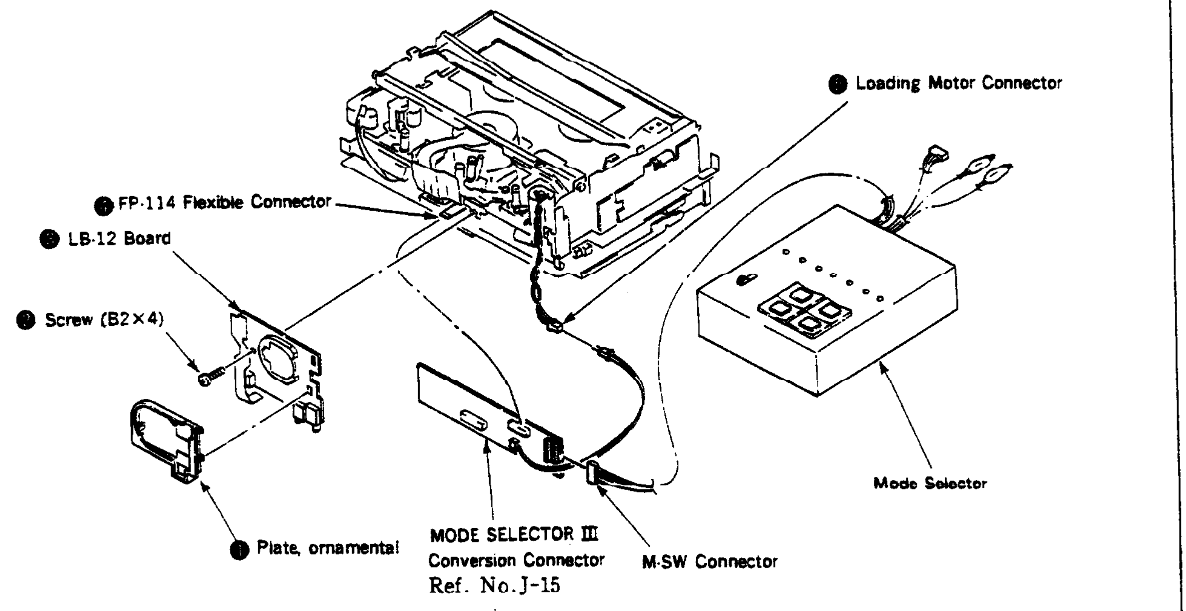
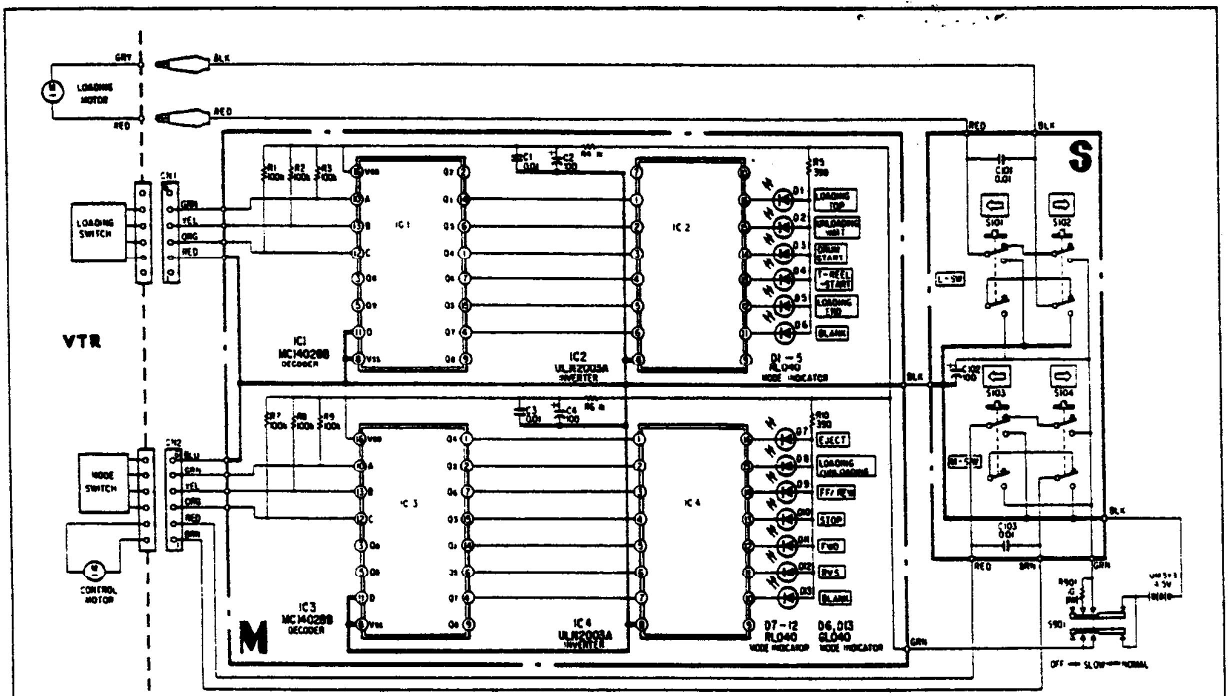

❺ Loading Motor Connector
❹ FP-114 Flexible Connector
❸ LB-12 Board
❷ Screw (B2×4)
❶ Plate, ornamental
MODE SELECTOR III
Conversion Connector
Ref. No.J-15
M-SW Connector
Mode Selector

Fig. 6

1-5 MODE SELECTOR SCHEMATIC DIAGRAM


GRY
BLK
LOADING MOTOR
RED
CN1
LOADING SWITCH
GRN
YEL
ORG
RED
VTR
CN2
MODE SWITCH
BLU
BRN
CONTROL MOTOR
R1 100k
R2 100k
R3 100k
C1 0.01
C2 100
R4 1k
R5 390
IC1
MC14028B
DECODER
IC2
ULN2003A
INVERTER
D1-5
RL040
MODE INDICATOR
LOADING TOP
UNLOADING WAIT
DRUM START
T-REEL-START
LOADING END
BLANK
R7 100k
R8 100k
R9 100k
C3 0.01
C4 100
R6 1k
R10 390
IC3
MC14028B
DECODER
IC4
ULN2003A
INVERTER
EJECT
LOADING/UNLOADING
FF/REW
STOP
FWD
RVS
BLANK
D7-12
RL040
MODE INDICATOR
D6,D13
GL040
MODE INDICATOR
S
M
C101 0.01
S101
S102
L-SW
C102 100
S103
S104
M-SW
C103 0.01
BLK
RED
GRN
R901
S901
OFF → SLOW → NORMAL

M-SW
(IC 3)

DECODER INPUT			MODE	LED NO
C	B	A		
0	0	0		
0	0	1	FWD	D11
0	1	0	LOADING/UNLOADING	D8
0	1	1	STOP	D10
1	0	0	EJECT	D7
1	0	1	RVS	D12
1	1	0	FF/REW	D9
1	1	1	BLANK	D13

0: INPUT LEVEL L
1: INPUT LEVEL H

L-SW
(IC 1)

DECODER INPUT			MODE	LED NO
C	B	A		
0	0	0		
0	0	1	LOADING TOP	D1
0	1	0		
0	1	1	LOADING END	D5
1	0	0	DRUM START	D3
1	0	1	UNLOADING WAIT	D2
1	1	0	T-REEL-START	D4
1	1	1	BLANK	D6

SWITCH		DIRECTION OF MOTOR REVOLUTION
⇦	⇨	
OFF	OFF	STOP
ON	OFF	⇦
OFF	ON	⇨

⇦ L-SW LOADING END → LOADING TOP
M-SW RVS → EJECT

⇨ L-SW LOADING TOP → LOADING END
M-SW EJECT → RVS

1-6 MODE SELECTOR PARTS LIST

Ref. No	Part No.	Description
		CAPACITOR
C1	1-108-579-00	MILER 0.01μF 50V
C2	1-123-333-00	ELECT 100μF 24V
C3	1-108-579-00	MILER 0.01μF 50V
C4	1-123-333-00	ELECT 100μF 24V
C101	1-108-579-00	MILER 0.01μF 50V
C102	1-123-333-00	ELECT 100μF 24V
C103	1-108-579-00	MILER 0.01μF 50V
		DIODE
D1	8-719-812-31	DIODE TLR123
D2	8-719-812-31	DIODE TLR123
D3	8-719-812-31	DIODE TLR123
D4	8-719-812-31	DIODE TLR123
D5	8-719-812-31	DIODE TLR123
D6	8-719-812-33	DIODE TLG123A
D7	8-719-812-31	DIODE TLR123
D8	8-719-812-31	DIODE TLR123
D9	8-719-812-31	DIODE TLR123
D10	8-719-812-31	DIODE TLR123
D11	8-719-812-31	DIODE TLR123
D12	8-719-812-31	DIODE TLR123
D13	8-719-812-33	DIODE TLG123A

Ref. No	Part No.	Description
		IC
IC1	8-752-240-28	IC TC4028BP
IC2	8-752-120-03	IC μPA2003C
IC3	8-759-240-28	IC TC4028BP
IC4	8-759-120-03	IC μPA2003C
		RESISTOR
R1	1-247-179-00	CARBON 100K 1/4W
R2	1-247-179-00	CARBON 100K 1/4W
R3	1-247-179-00	CARBON 100K 1/4W
R4	1-247-131-00	CARBON 1K 1/4W
R5	1-247-121-00	CARBON 390 1/4W
R6	1-247-131-00	CARBON 1K 1/4W
R7	1-247-179-00	CARBON 100K 1/4W
R8	1-247-179-00	CARBON 100K 1/4W
R9	1-247-179-00	CARBON 100K 1/4W
R10	1-247-121-00	CARBON 390 1/4W
R901	1-214-594-00	METAL 10 1W

2. PERIODIC CHECK AND MAINTENANCE

- Carry out the following maintenance and periodic checks in order not only to fully exhibit the functions and performance of the set, but also for the equipment and tape. After repairing, service the set as follows, regarless of the length of use.

2-1 CLEANING OF ROTARY DRUM ASSEMBLY

1) Gently apply chamois cloth (Ref. No. J-2) soaked in cleaning liquid (Ref. No. J-1) to the rotary drum assembly.
   Clean it by rotating the upper rotary drum assembly slowly counterclockwise by hand.

Note : Do not rotate the motor by power or rotate the upper rotary drum assembly clockwise by hand. Also, the head tip is highly likely to be damaged if the chamois cloth is moved in a pependicular direction to the it. Make sure to follow the instructions above for cleaning the rotary drum assembly.

2-2 CLEANING OF TAPE PATH (Fig. 7)

1) In the EJECT mode, clean the tape running system (TG-1, -2, -3, -4, -5, -6, -7, -8, -9, -10, -11, pinch roller, and capstan shaft) and the lower drum, using a superfine applicator (Ref. No. J-3) soaked in the cleaning liquid.

Note : Note that no oil or grease of each link mechanism adheres to the superfine applicator (Ref. No. J-3).

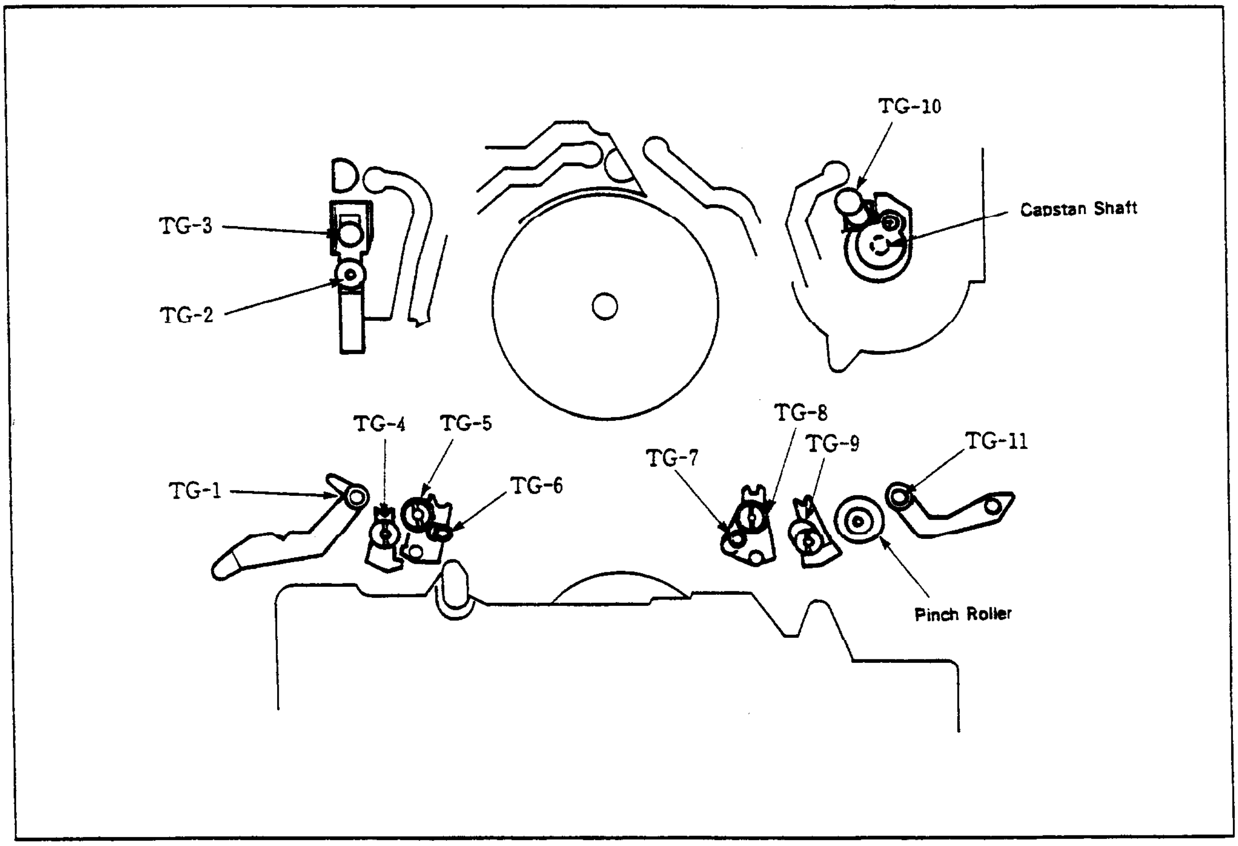


Fig. 7

2-3 PERIODIC CHECK ITEMS

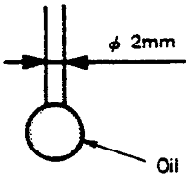
Location of Maintenance and check		Hours of Use (H)										Remarks
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
Tape trans-portion System	Cleaning of tape path surface	○	○	○	○	○	○	○	○	○	○	Be careful of oil
	Cleaning and degaussing of rotary assembly	○	○	○	○	○	○	○	○	○	○	Be careful of oil
Driving System	Relay belt	—	☆	—	☆	—	☆	—	☆	—	☆	3-728-212-01
	Capstan shaft	—	◎	—	◎	—	◎	—	◎	—	◎	Be adsolutely careful not to get oil on the tape path surface.
	Relay pulley sheft	—	◎	—	◎	—	◎	—	◎	—	◎	
	Loading motor	—	☆	—	☆	—	☆	—	☆	—	☆	1-541-607-11
Performance Confirmation	Abnormal noise	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Back tension measurement	—	☆	—	☆	—	☆	—	☆	—	☆	
	Brake system	—	☆	—	☆	—	☆	—	☆	—	☆	
	FWD. RVS torque measurement	—	☆	—	☆	—	☆	—	☆	—	☆	

○ : Cleaning ◎ : Oil ☆ : Confirmation

Note : When overhauling, refer to the items above to replace parts.

Note : Concerning oil

- Be sure to use specified oil. (If you use oil with different visicosity, etc., it may cause troubles.)
  Oil : Part No. 7-661-018-18 (Mitsubishi Diamond Oil Hydrofluid NT-68)
- When lubricating bearings, be sure use oil free from dust, etc. (If you use oil with dust, etc. contained, it may cause bearings to be worn out or seized.)
- A drip of oil refers to an amount attached to the tip of a ϕ 2mm stick shown in the right figure.

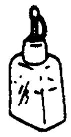


2-4 Service jigs list

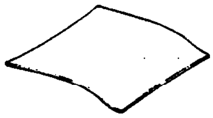
Ref. No.	Neme	Part No.	Fixture No.	Usage and Others
J-1	Cleasing fluid	Y-2031-001-0	—	
J-2	Cleasing cloth	2-034-697-00	—	
J-3	Super fine applicator (Made by NIPPON APPLICATOR, P752D)		—	
J-4	Head degausser	Widely available	—	
J-5	Small mirror for adjustment Spare mirror	J-6080-029-A J-6080-030-1	SL-5052	Tape path
J-6	Alignment tape NTSC (WR5-1N) PAL (WR5-1C)	8-967-995-01 8-967-995-06		Tape path
J-7	Dial tension gauge	J-6080-827-A		Various torque measurement
J-8	Tension measurement reel	J-6080-831-A		With ϕ30 tape
J-9	FWD and RVS winding torque cassette	J-6080-824-A	GD-2086	
J-10	Drum screwdriver (Hexagonal wrench screwdriver)	7-700-766-01		
J-11	Screwdriver for tape path	J-6082-026-A		For tape guide adjustment
J-12	Mode selector III panel	J-6082-023-A		
J-13	Mode selector	J-6080-825-A		For all models
J-14	Mode selector III conversion connector	J-6082-021-A		

Other equipment
- Oscilloscope
- Analog tester (20kΩ)

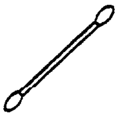
J-1



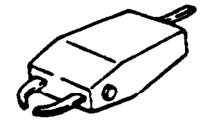
J-2



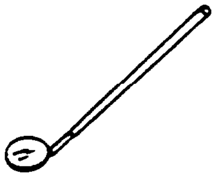
J-3



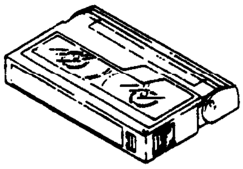
J-4



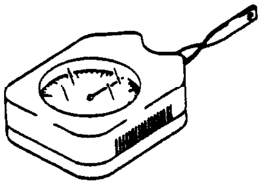
J-5



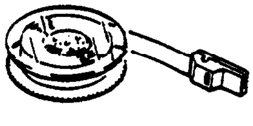
J-6



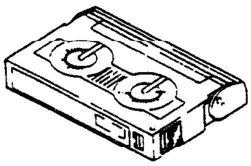
J-7



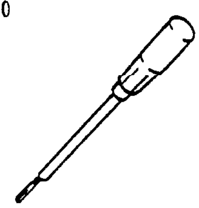
J-8



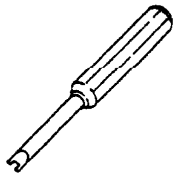
J-9



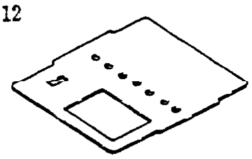
J-10



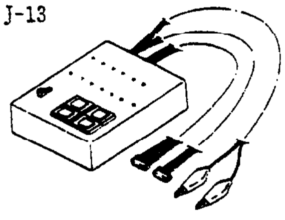
J-11



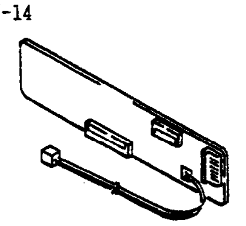
J-12



J-13



J-14



3. MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

Note : Use the mode selector (Ref. No. J-14) for the following mechanical checks, adjustments and replacements.

Note : The modes in ☐ are those set by pressing the mode selector buttons.

3-1 LED BASE (Fig. 8)

1. Removal

1) Select the USE mode.
2) Referring to 1-1, remove the cassette compartment holder assembly.
3) As shown in Fig. A, rotate the LED in a direction of the arrow Ⓐ and remove it in a direction of the arrow Ⓑ.
4) Remove the three screws ●, ● and ●.
5) Lifting the LED base ●, remove it by pushing it in a direction of the arrow Ⓒ.

Note : Dismount and remount the LED base carefully, because its holder is easily deformed.

2. Mounting

1) Select the USE mode.
2) Put the claw ● of the LED base ● in the notch ● of the LS chassis without catching the LED in between. Next, fit to the dowels ● at 2 places.
3) Mount and tighten the screws ●, ● and ● in that order.
4) As shown in Fig. B, set the LED in a direction of the arrow Ⓐ and rotate it in a direction of the arrow Ⓑ to fix.
5) As shown in Fig. C, bend a flexible boord and put it in the holder.

Note : In the step2), make sure that the barring ● of the arm assy, gear can appears in the hole of the LED base. (Fig. D)

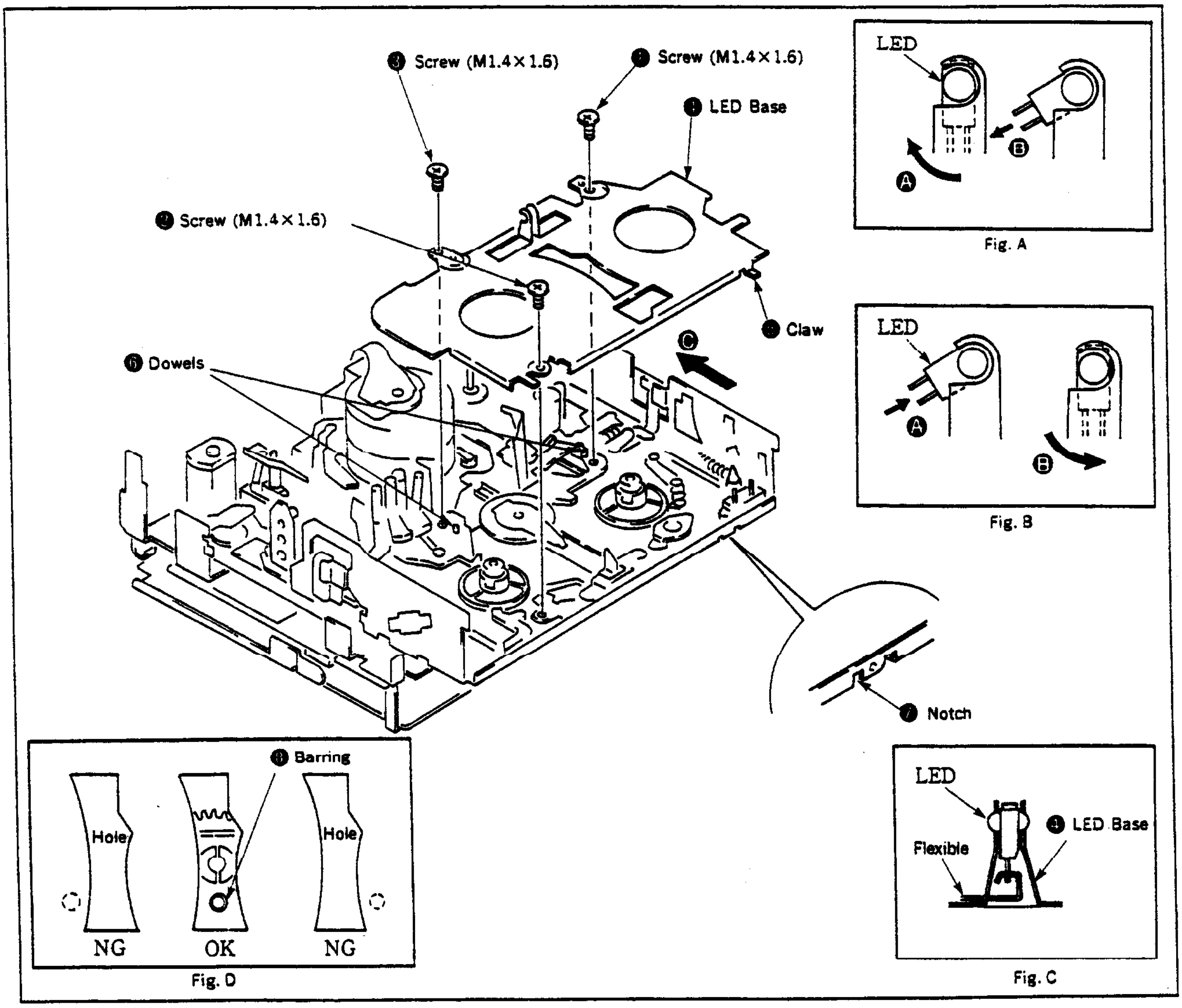


Fig. A

Fig. B

Fig. D

Fig. C

Fig. 8

3-2 RL BASE ASSEMBLY, RETAINER (Fig. 9)

1. Removal

1) Select the USE mode.
2) Referring to 1-1, remove the cassette compartment holder assemlby.
3) Referring to 3-1, remove the LED base.
4) Remove the screw ●, and then, retainer ●.
5) Remove the screw ●, and then, RL base assembly ●.

2. Mounting

1) Select the USE mode.
2) With the screw ●, mount the RL base assembly ● to the LS chassis.
3) With the screw ● fix the retainer ● to the RL base assembly ●.
   When this is done, align the bump part ⁎ of the retainer ● with the bump part ⁎ of the guide rail T. (Fig. A)
4) Referring to 3-1, mount the LED base.
5) Referring to 1-1, mount the cassette compartment holder assembly.

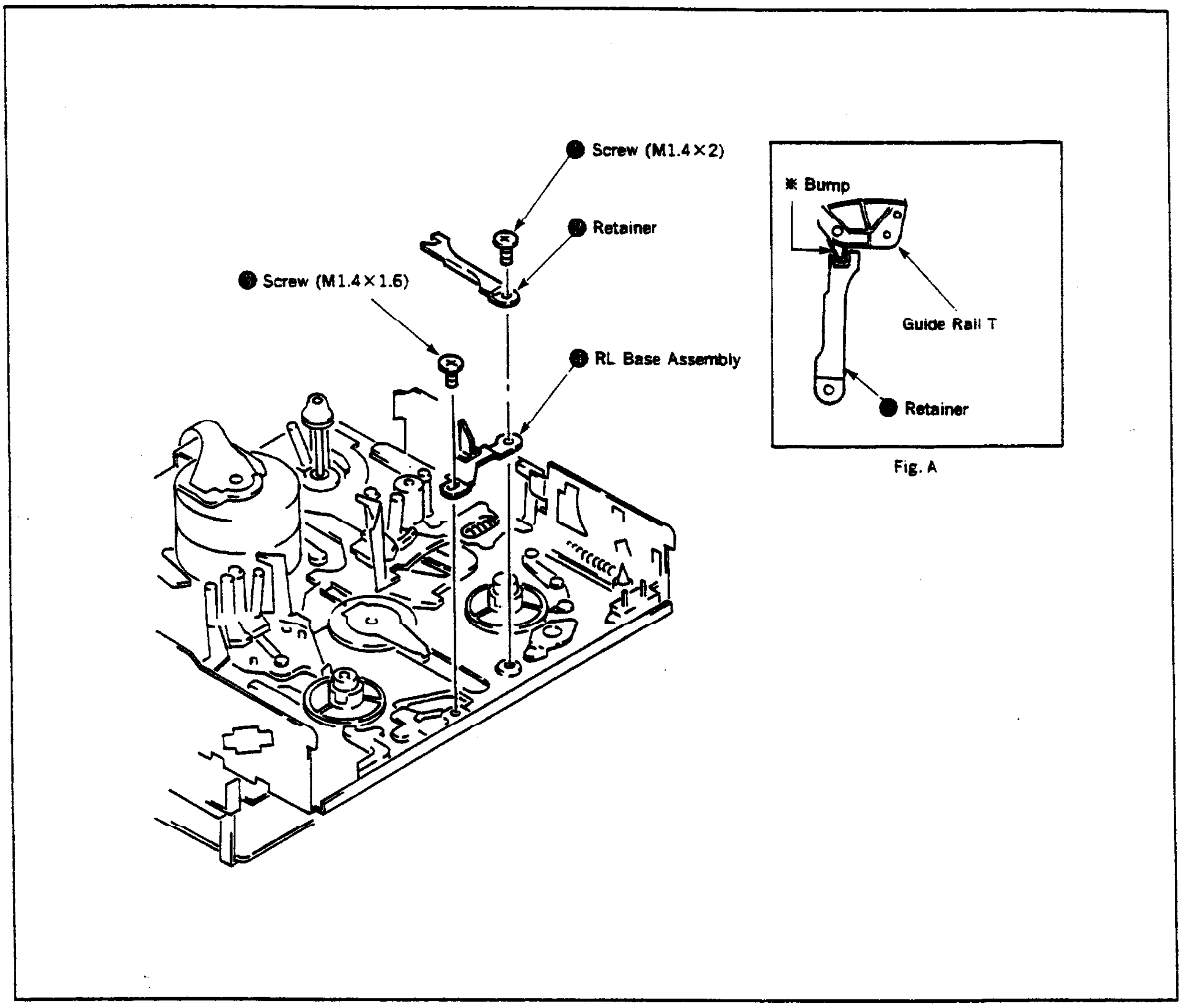

● Screw (M1.4×2)
● Retainer
● Screw (M1.4×1.6)
● RL Base Assembly
⁎ Bump
Guide Rail T
● Retainer
Fig. A

Fig. 9

3-3 TABLE ASSY, REEL, SUPPLY (Fig. 10)

1. Removal

1) Select the USE mode.
2) Referring to 1-1, remove the cassette compartment holder assembly.
3) Referring to 3-1, remove the LED base.
4) As shown in Fig. A, making use of slackness of the tension regulator string ● in the USE mode, remove the string out of the groove of the table assy, reel, supply ●. When this is done, be careful not to bend the tension regulator string ● and the S soft arm ● must be moved in a direction of the arrow Ⓑ.
5) Remove the table assy, reel, supply ●.

Note : Dismount and remount the table assy, reel, supply ●, holding the reel claw ✱.

2. Mounting

1) Select the USE mode.
2) As shown in Fig. B, move the S soft arm ● in a direction of the arrow Ⓑ.
3) Avoiding the tension regulator string ●, mount the table assy, reel, supply ● to the shaft ●.
4) Put the tension regulator string ● in the groove of the table assy, reel, supply ● and fit it properly by turning the table assy, reel, supply ●.
5) Referring to 3-1, mount the LED base.
6) Referring to 1-1, mount the cassette compartment holder assembly.

Note : Do not touch the tension regulator string ● with naked hand. Also, be careful of adhesion of grease, etc.

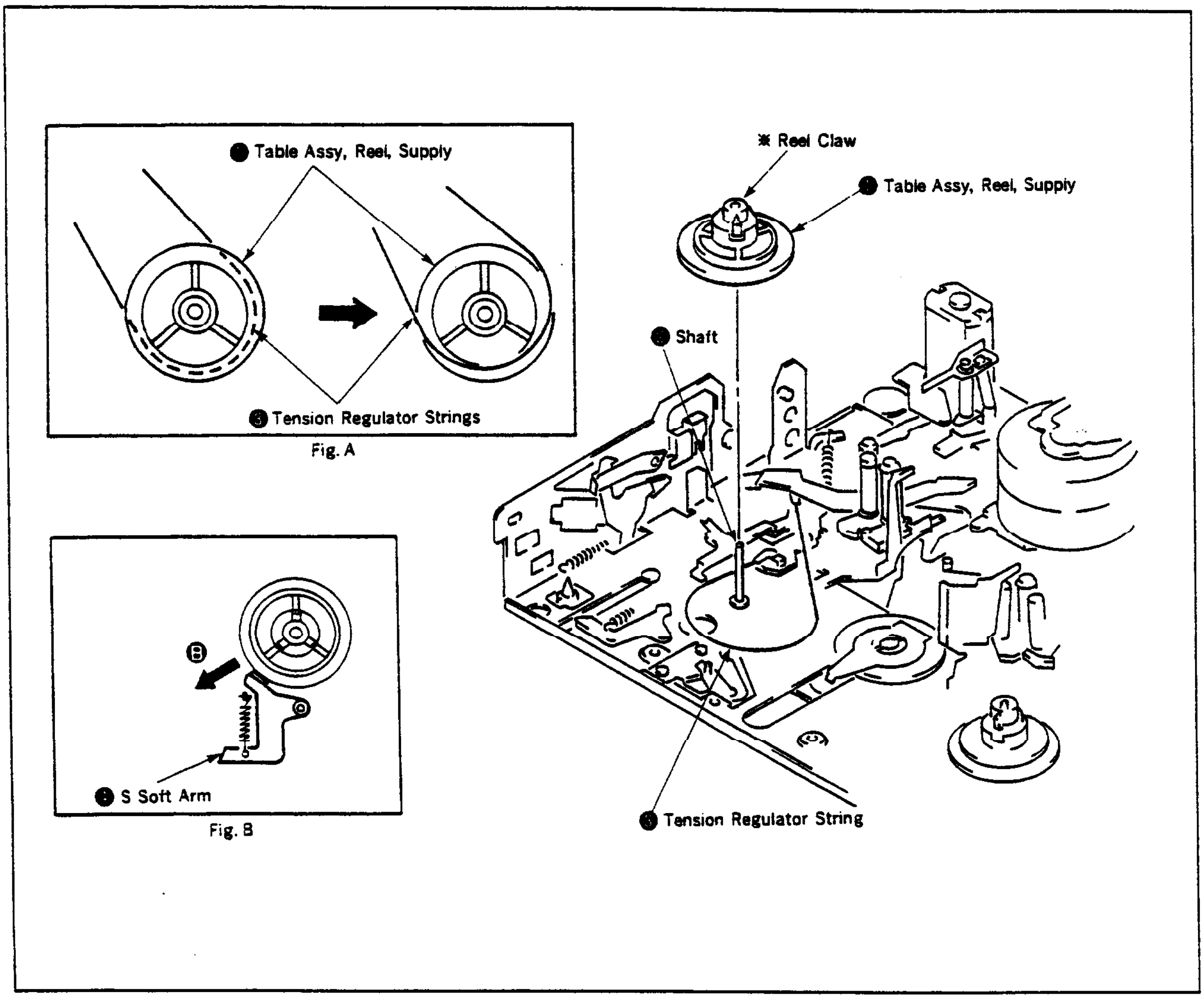

● Table Assy, Reel, Supply
● Tension Regulator Strings
Ⓑ
● S Soft Arm
✱ Reel Claw
● Table Assy, Reel, Supply
● Shaft
● Tension Regulator String

Fig. A

Fig. B

Fig. 10

3-4 TABLE ASSY, REEL, TAKE-UP (Fig. 11)

1. Removal

1) Select the USE mode.
2) Referring to 1-1, remove the cassette compartment holder assembly.
3) Referring to 3-1, remove the LED base.
4) Referring to 3-2, remove the retainer.
5) Dispace the T ratchet ❶ in a direction of the arrowⒶ.
6) With the claw (T ratchet head) of the T ratchet ❶ moved in a direction of the arrowⒷ, remove the Table assy, reel, take-up ❷.

Note : Dismount and remount the Table assy, reel, take-up ❷, holding the reel claw ⋇.

2. Mounting

1) Select the USE mode.
2) With the claw (T ratchet head) of the T ratchet ❶ moved in an arrow direction, mount the Table assy, reel, take-up ❷ to the shaft ❸.
3) Referring to 3-2, mount the retainer.
4) Referring to 3-1, mount the LED base.
5) Referring to 1-1, mount the cassette compartment holder assembly.

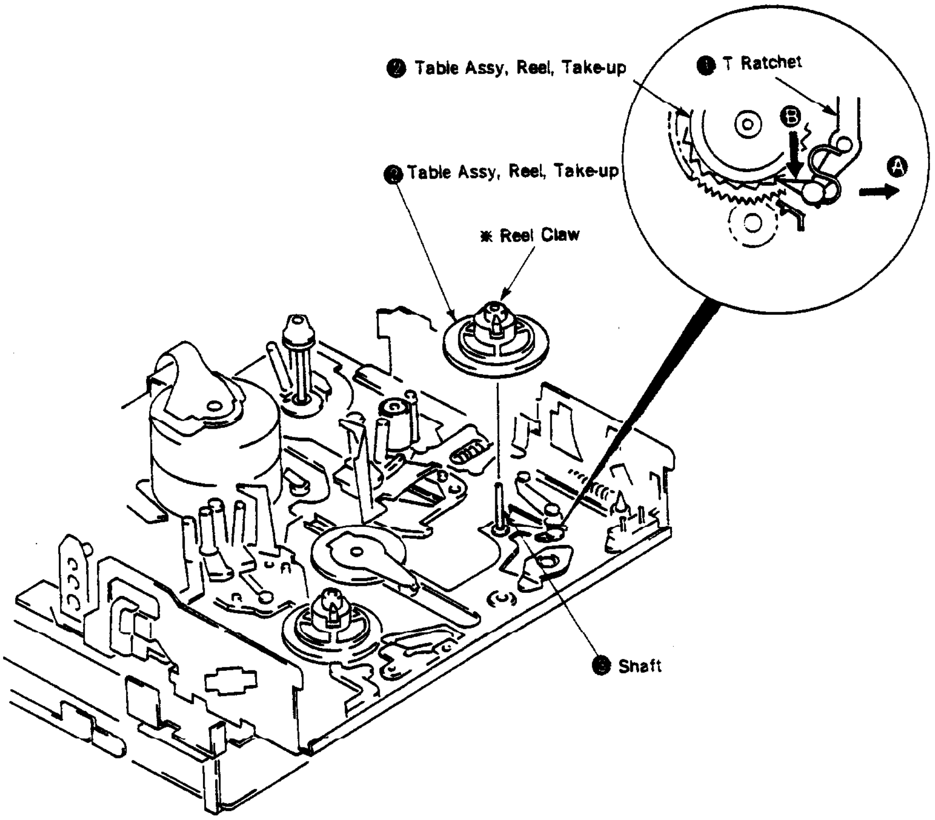


Fig. 11

3-5 ONEWAY CLUTCH ASSEMBLY (Fig. 12)

1. Removal

1) Select the USE mode.
2) Referring to the cassette compartment holder assembly.
3) Referring to 3-1, remove the LED base.
4) Remove the screw ●, and then, oneway clutch assembly ●.

2. Mounting

1) Select the USE mode.
2) Mount the oneway clutch assembly ● to the LS chassis and fix with the screw ●.
3) Referring 3-1, mount the LED base.
4) Referring to 1-1, mount the cassette compartment holder assembly.

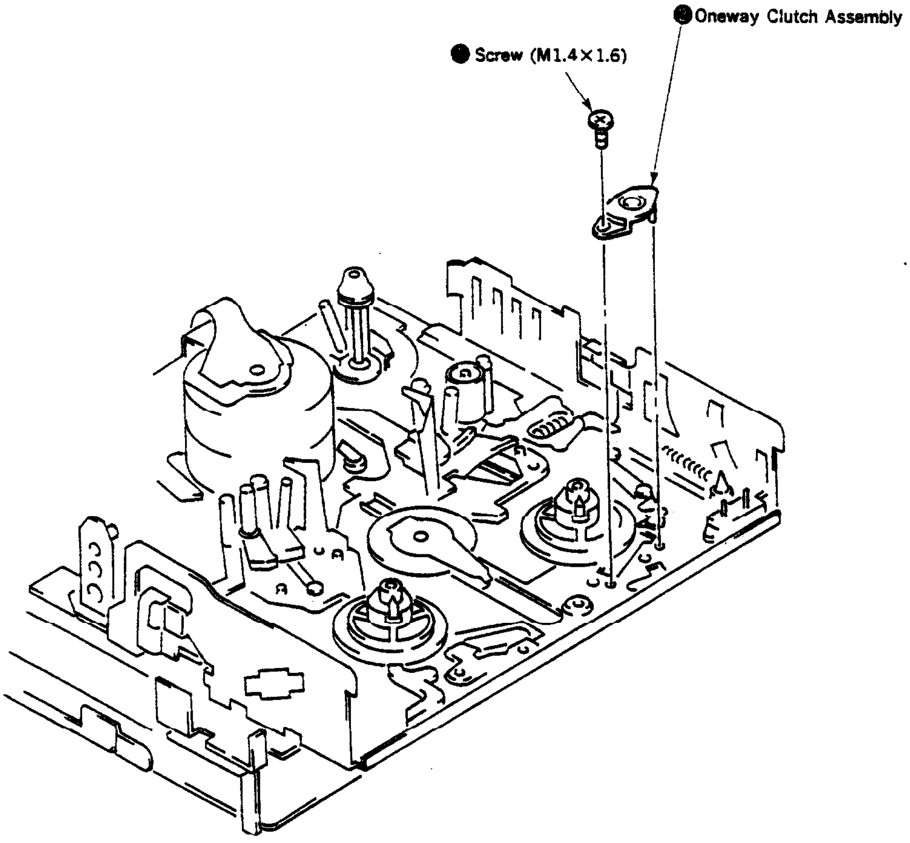


Fig. 12

3-6 S SOFT ARM ASSEMBLY (Fig. 13)

1. Removal

1) Select the USE mode.
2) Referring to 1-1, remove the cassette compartment holder assembly.
3) Referring to 3-1, remove the LED base.
4) Rerove the lock washer ●, and then, the spring, tension ●.
5) Remove the S soft arm assembly ● by rotating it in an arrow direction (until the hook ● comes off the LS chassis).

2. Removal

1) Select the USE mode.
2 As shoms in Fig. A, apply a quarter drip of oil to the arrowindicated part of the shaft ●.
3) Mount the S soft arm assembly ● to the shaft ●, rotating it in as arrow direction. (Be careful not to bend the hook ●.)
4) Hook the spring, tension 2 onto the claw and fix it with lock washer 1.
5) Referring to 3-1, mount the LED base.
6) Referring to 1-1, mount the cassette compartment holder assembly.

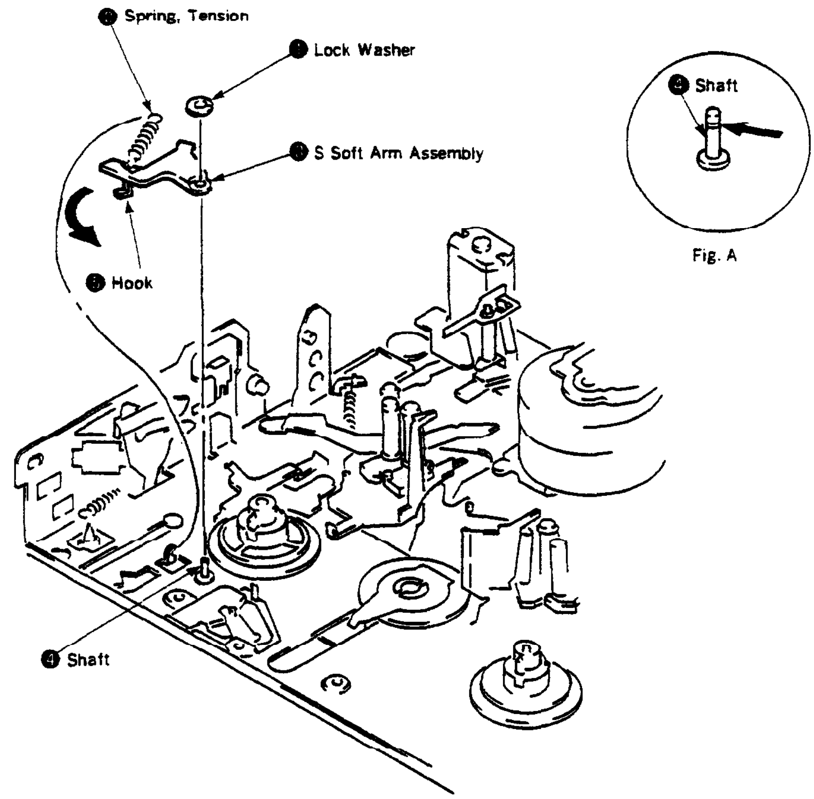


Fig. 13

3-7 LS CHASSIS ASSEMBLY (Fig. 14)

1. Removal

1) Select the USE mode.
2) Referring to 1-1, remove the cassette compartment holder.
3) Referring to 3-1, remove the LED base.
4) Referring to 3-2, remove the RL base assembly and retainer.
5) Remove the lock washer ①, and then, arm assy gear ②.
6) Select the Q, REW mode.
7) Remove the flexible rotary shaft ③, and then, the flexible connector ④.
8) Remove the E retaining ring ⑤ and three screws ⑥.
9) Remove the LS chassis assembly ⑦ in a direction of the arrow Ⓓ.

2. Mounting

1) As shown in Fig. A, apply Molyton grease to the arrow-indicated part of the LS chassis assembly ⑦.
2) Unload in the RDY mode. Start docking in the Q, REW mode after first GL. When docking the mechanical chassis and LS chassis assembly ⑦, it is necessary to place the following parts at specified positions.
3) Put the pin ●of the pinch arm assembly ●into the left side of the pinch press arm assembly●. (Fig.19)
4) Move the TG-1 arm assembly●in a direction of the arrow Ⓐ to put the pin ●into the concave of the arm assembly ●. (Fig. 17)
5) put the pin●of the S ratchet●into the right side the of the arm assembly●. (Fig. 17)

Simultaneously performing the operations above, push the roller of the guide lock arm ● With the arm arc portion of the guide arm T assembly● (Fig. 15) to push the LS chassis assembly ⑦ in a direction of the arrow Ⓔ, and at the same time, engage the claws of the guide rail base 1●, guide rail base 2●and guide rail base3●with those of the guide rail S● and guide rail T●. (Fig. 16)
Then, align the shafts ⑨ of the mechanical chassis With the four long joints of the LS chassis assembly ⑦, and put the LS pin●of the LS arm assembly●in the groove of the LS cam plate●. (Fig.18)

Note : Before docking, confirm that both EJ arm and LS arm are deeply inserted into the shafts. (If not properly fit, the set does not function even if the LS chassis is docked.

6) Mount the E retaining ring ⑤ and three screws ⑥.
7) Mount the flexible rotary shaft ③ and flexible connector ④.
8) Select the USE mode.
9) Mount the arm assy gear ② and fix with the lock washer ①.
10) Referring to 3-2, mount the RL base assembly and retainer.
11) Referring to 3-1, mount the LED base.
12) Referring to 1-1, mount the cassette compartment holder assembly.

Note : Using the mode selector, confirm that loading and unloading are performed smoothly.

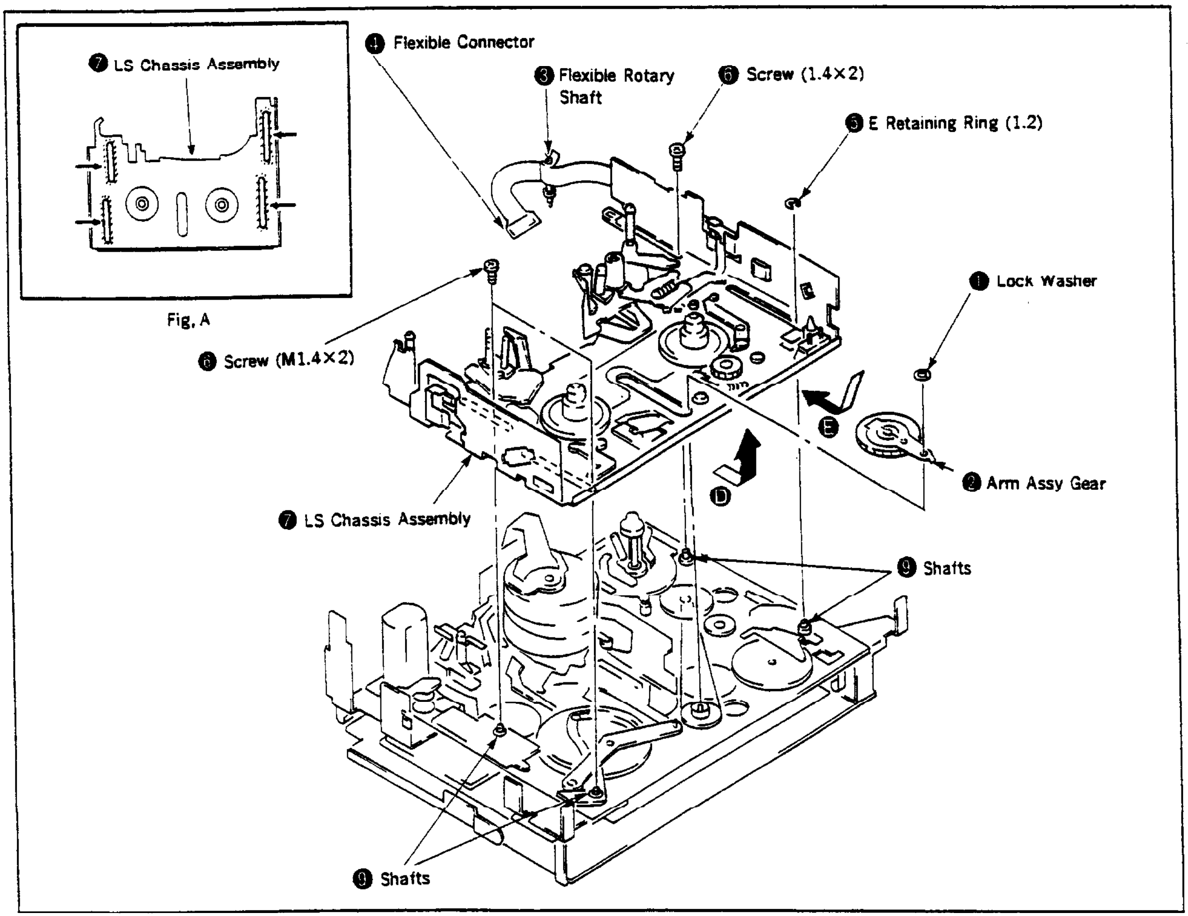


Fig. 14

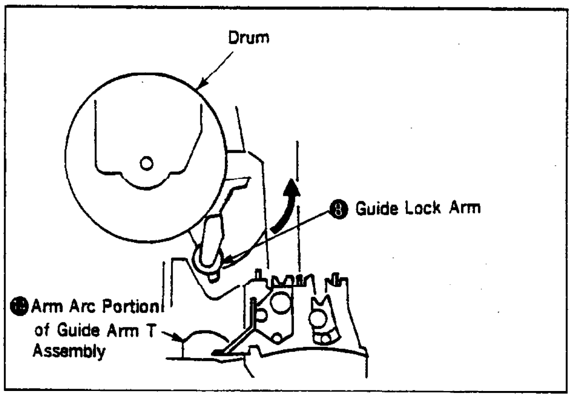

Drum
Guide Lock Arm
Arm Arc Portion of Guide Arm T Assembly

Fig. 15

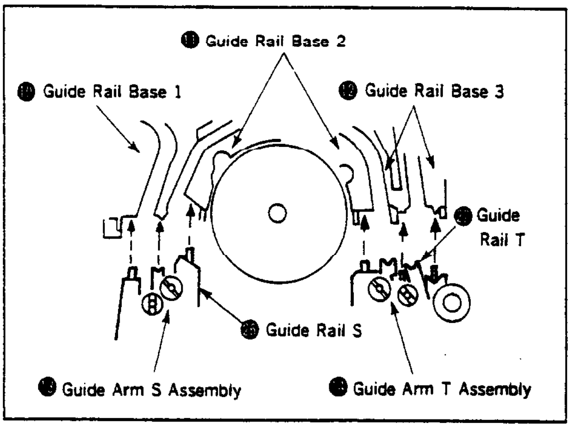

Guide Rail Base 2
Guide Rail Base 1
Guide Rail Base 3
Guide Rail T
Guide Rail S
Guide Arm S Assembly
Guide Arm T Assembly

Fig. 16

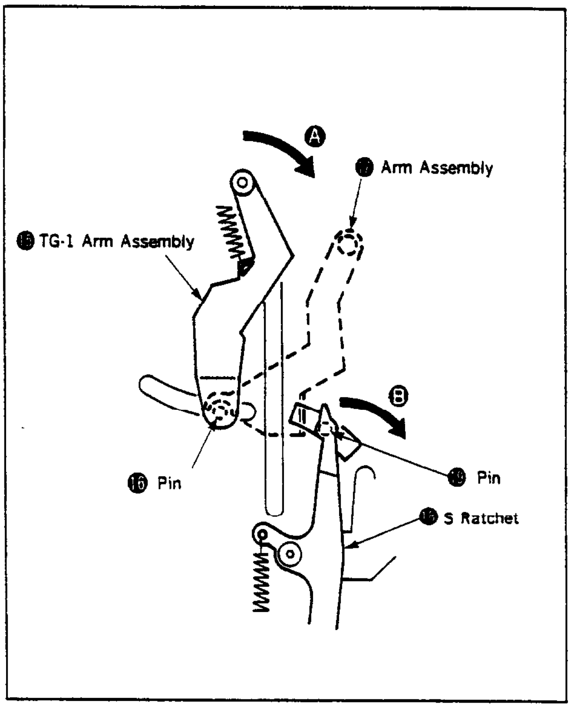

A
Arm Assembly
TG-1 Arm Assembly
B
⑯ Pin
Pin
S Ratchet

Fig. 17

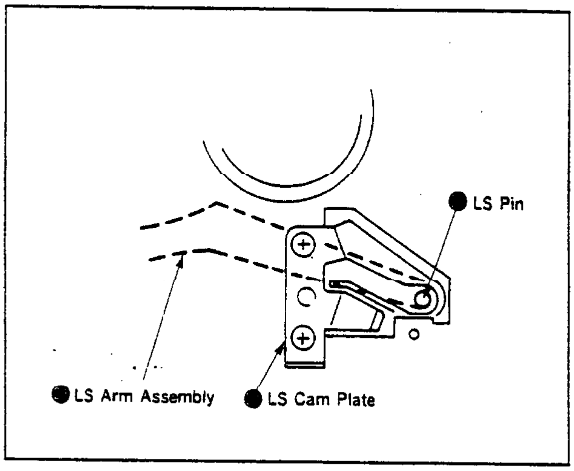

LS Pin
LS Arm Assembly
LS Cam Plate

Fig. 18

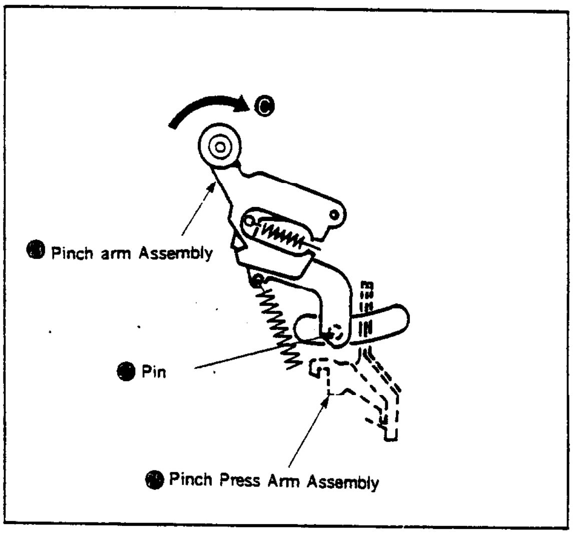

C
Pinch arm Assembly
Pin
Pinch Press Arm Assembly

Fig. 19

-8 PINCH ARM ASSEMBLY (Fig. 20)

.. Removal

) Referring to 1-1, remove the cassette compartment holder assembly.

) Referring to 3-7, remove the LS chassis assembly.

) Remove the lock washer ❷ from the back of the LS chassis assembly ❶.

) Remove the spring, tension ❸, and then, pinch arm assembly ❹.

2. Mounting

1) As shown in Fig. A, apply oil to the hole of the boss ❺ over one third of a drip up to half a drip.
2) put the rotation center of the pinch arm assembly in the boss ❺ hole, and the pin ❻ in the long hole.
3) Hook the spring, tension ❸ onto the upper groove of the pinch return spring shaft ❼.
4) Mount the lock washer ❷ from the back of the LS chassis assembly ❶.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 1-1, mount the cassette compartment holder assembly.

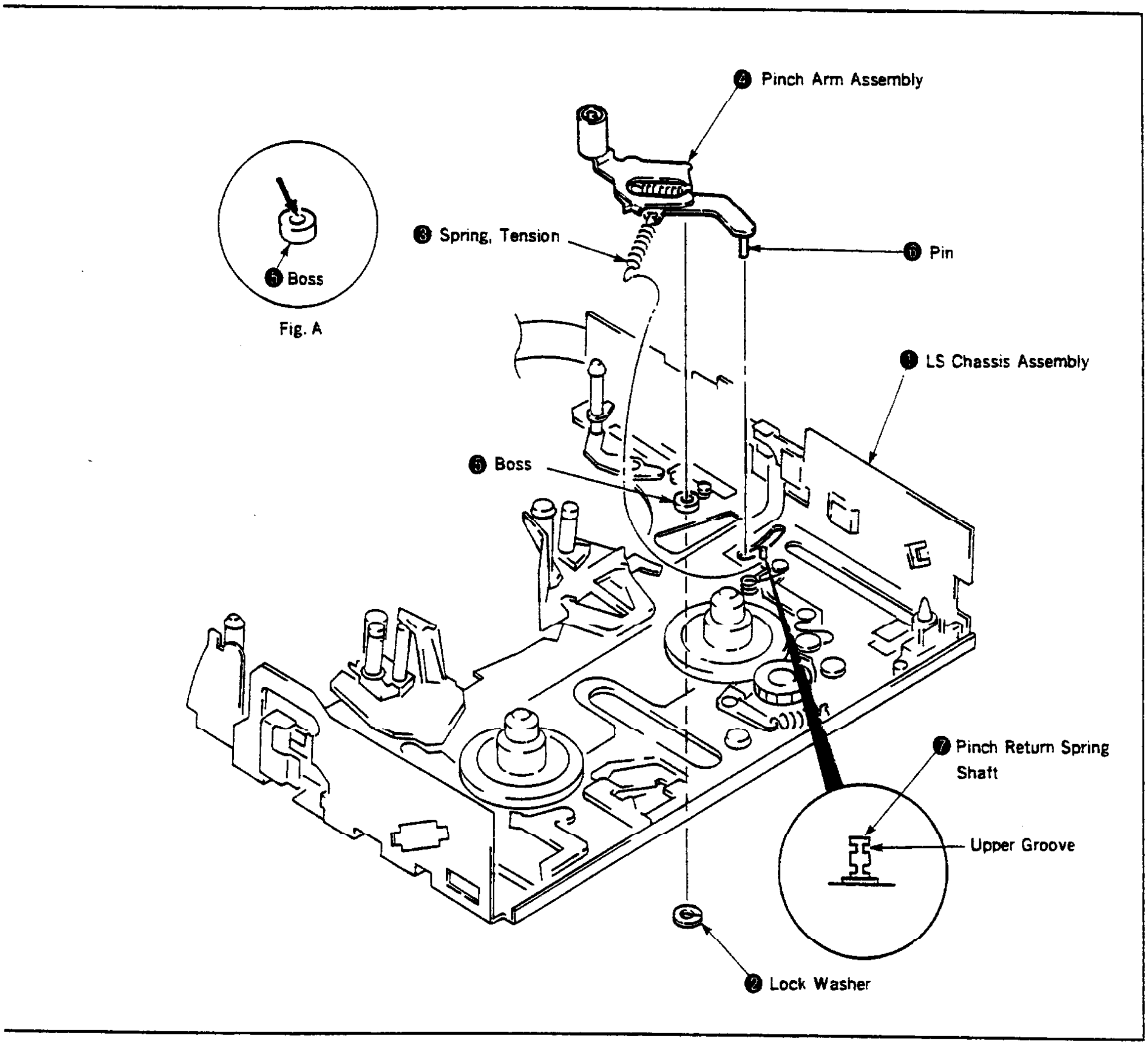

❹ Pinch Arm Assembly
❸ Spring, Tension
❻ Pin
❺ Boss
Fig. A
❶ LS Chassis Assembly
❺ Boss
❼ Pinch Return Spring Shaft
Upper Groove
❷ Lock Washer

Fig. 20

3-9 TG-11 ARM ASSEMBLY (Fig. 21)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Referring to 3-7, remove the LS chassis assembly.
3) Remove the lock washer ❷ from the back of the LS chassis assembly ❶.
4) Remove the TG-11 arm assembly ❸ and spring, torsion ❹.

Note : Be careful not to deform the TG-11 arm.

2. Mounting

1) As shown in Fig. A, apply oil to a boss hole over one third of a drip up a half a drip.
2) As shown in Fig. B, put the longer arm of the spring, torsion ❹ between the pinch arm boss ❺ and cam slider shaft ❽ of the LS chassis. Next, Hook the shorter arm of the spring, torsion ❹ around the pin ❻ of the TG-11 arm assembly ❸, rotate the TG-11 arm assembly and fix with the lock washer ❷. When this is done, see to it that the pin ❻ of the TG-11 arm assembly ❸ is located to the left side of the cam slider ❾ as shown in Fig. C.
3) Referring to 3-7, mount the LS chassis.
4) Referring to 1-1, mount the cassette compartment holder.

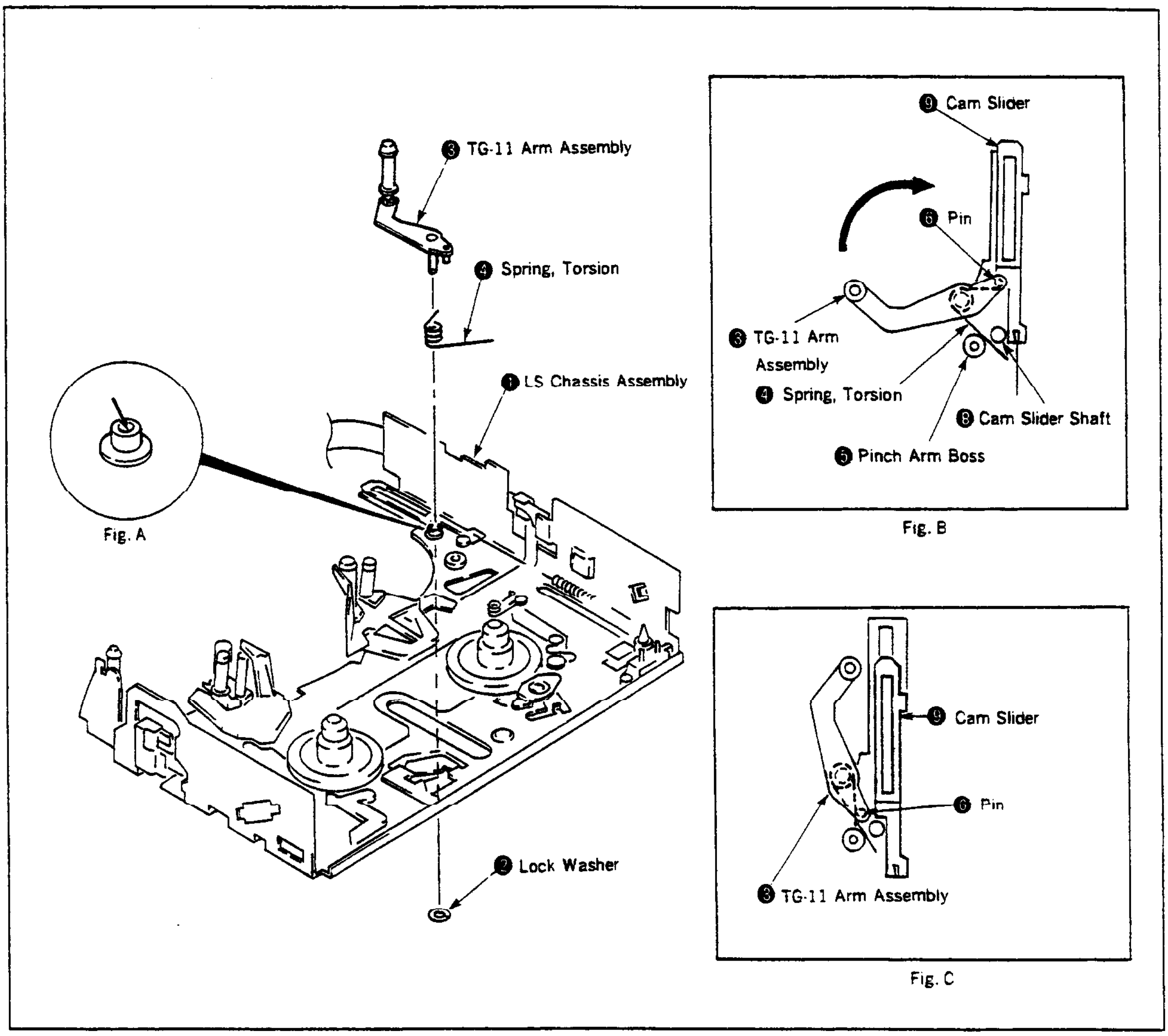

❸ TG-11 Arm Assembly
❹ Spring, Torsion
❶ LS Chassis Assembly
❷ Lock Washer
❾ Cam Slider
❻ Pin
❸ TG-11 Arm Assembly
❹ Spring, Torsion
❽ Cam Slider Shaft
❺ Pinch Arm Boss
❾ Cam Slider
❻ Pin
❸ TG-11 Arm Assembly

Fig. A

Fig. B

Fig. C

Fig. 21

3-10 TG-1 ARM ASSEMBLY (Fig. 22)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Referring to 3-7, remove the LS chassis.
3) Referring to 3-3, remove the table assy, reel, supply.
4) Remove the lock washer ❷ from the back of the LS chassis assembly ❶.
5) Remove the spring, tension ❸. Remove the string joint ❹ from the dowel ❺ of the TG-1 adjustment block ❾ by rotating it in a direction of the arrow Ⓐ as shown in Fig. C.
6) Remove the TG-1 arm assembly ❻.

Note : Dismount and remount the string joint ❹ carefully not to deform it.

2. Mounting

1) As shown in Fig. A, apply oil to the hole of the boss ❼ over one third of a drip up to half a drip.
2) As shown in Fig. C, mount the string joint ❹ to the TG-1 adjustment block ❾ in the opposite direction of the arrow Ⓐ.
3) Mount the TG-1 arm assembly ❻ to the boss ❼ in such a manner not to touch the guide and insert the pin ❽ into the long hole.
4) Hook the spring, tension ❸ onto the position shown in Fig. B.
5) Mount the lock washer ❷ from the back of the LS chassis assembly ❶.
6) Referring to 3-3, mount the table assy, reel, supply.
7) Referring to 3-7, mount the LS chassis assembly.
8) Referring to 1-1, mount the cassette compartment holder assembly.

Note : Referring to 3-27, adjust a tension regulator position.

Note : Referring to 3-28, adjust a FWD back tension.

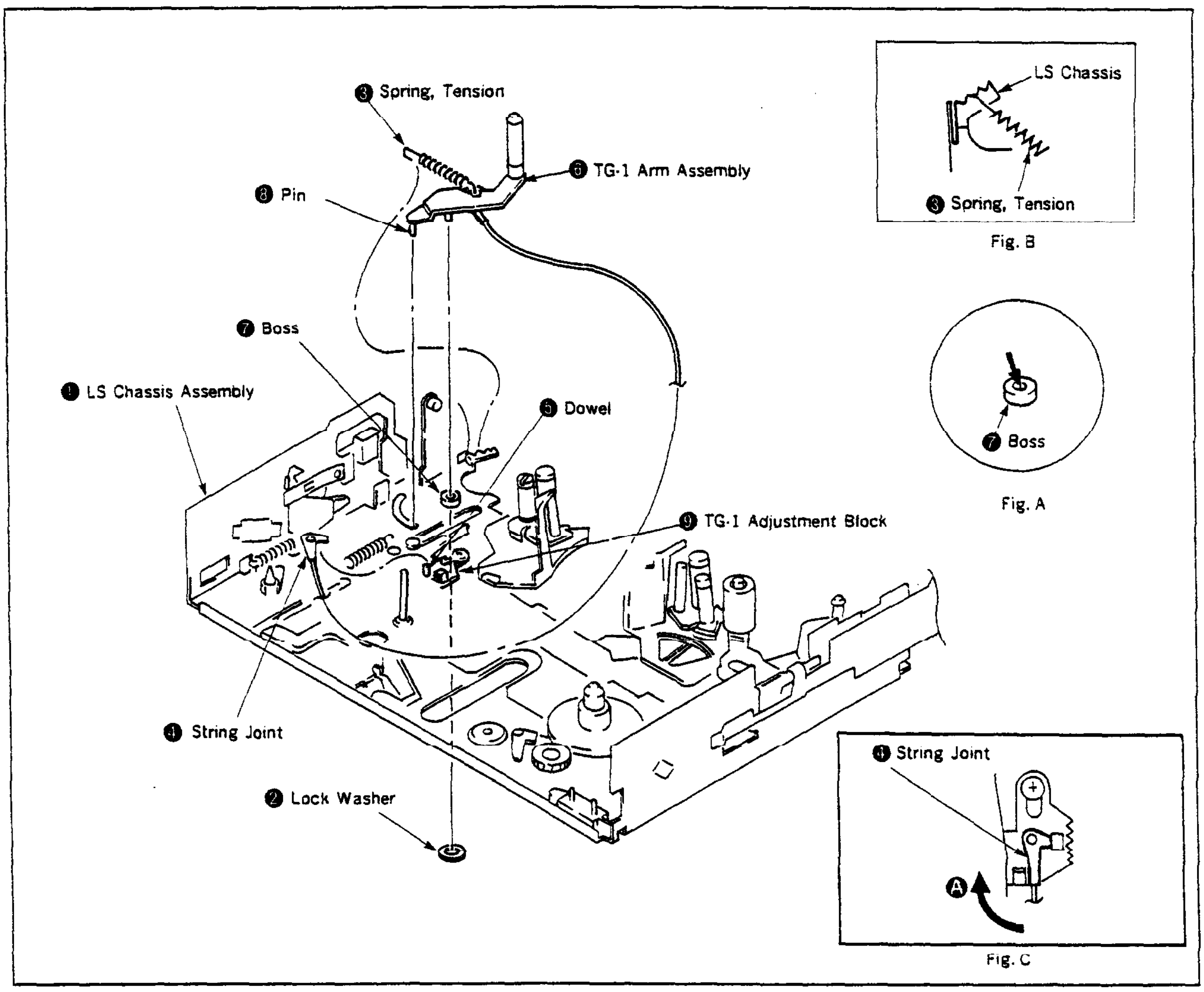

❸ Spring, Tension
❻ TG-1 Arm Assembly
❽ Pin
❼ Boss
❶ LS Chassis Assembly
❺ Dowel
❾ TG-1 Adjustment Block
❹ String Joint
❷ Lock Washer
LS Chassis
❸ Spring, Tension
❼ Boss
❹ String Joint
Ⓐ

Fig. B

Fig. A

Fig. C

Fig. 22

3-11 STRING JOINT (Fig. 23)

1. Removal

1) Referring to 3-10, remove the TG-1 arm assembly ❶.
2) Remove the joint holder ❷, and then, string assembly ❸.

2. Mounting

1) Put the dowel ❹ of the TG-1 arm assembly ❶ into the hole of the string assembly ❸ and mount the joint holder ❷. (Apply screw lock between the joint holder and TG-1 arm assembly.)
2) Referring to 3-10, mount the TG-1 arm assembly ❶.

Note : Be careful not to bend the string assembly ❸.

Note : Do not touch the guide ✱.

Note : The joint holder ❷, which was removed once, must not be used again.

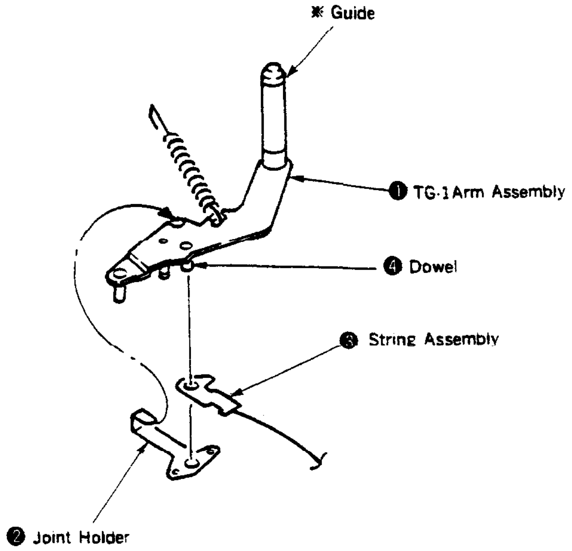

✱ Guide
❶ TG-1 Arm Assembly
❹ Dowel
❸ String Assembly
❷ Joint Holder

Fig. 23

3-12 GUIDE ARM T ASSEMBLY, GUIDE ARM S ASSEMBLY

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Referring to 3-7, remove *the LS chassis assembly.*
3) Rotate the guide arm T assembly ❶ and guide arm S assembly in arrow directions respectively, align their shafts ❸ with the holes as shown in Fig. A, and remove them. (Fig. 24)

Note : Do not touch the guide ✱. (Fig. 25 and Fig. 26)

2. Mounting

1) After inserting the guide arn T and S assemblies in the reverse order of removal, rotate them in the opposite directions of the *arrows respectively.*
2) Fit the TG-7 base assembly ❺ and TG-9 base assembly ❻ in the grooves of the guide rail T ❹. (Fig. 25)
3) Put the shaft ❸ flange in the long groove of the guide rail S ❽, and fit the TG-4 base assembly ❾ and TG-6 base assembly ❿ into the right and left grooves of the guide rail S ❽ respectively.

   When this is done, see to it that the flat spring of the TG-6 base assembly❿ is located below the guide rail S ❽ as shown in Fig. B. (Fig.26)
4) Referring to 3-7, mount the LS chassis assembly.
5) Referring to 1-1, mount the cassette compartment holder assembly.

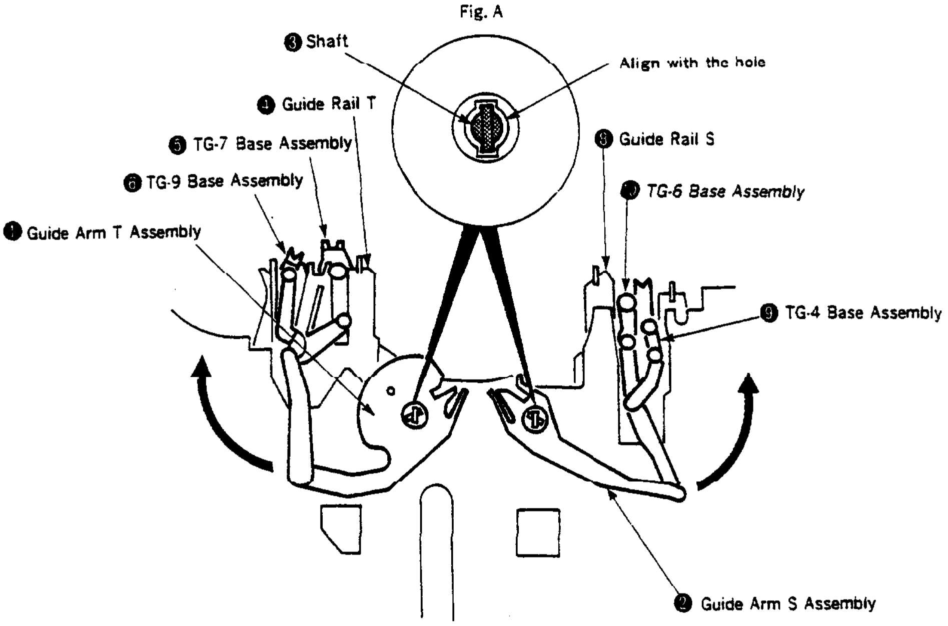


Fig. A
❸ Shaft
Align with the hole
❹ Guide Rail T
❺ TG-7 Base Assembly
❻ TG-9 Base Assembly
❶ Guide Arm T Assembly
❽ Guide Rail S
❿ TG-6 Base Assembly
❾ TG-4 Base Assembly
❷ Guide Arm S Assembly

LS Chassis Assembly Viewed from Back

Fig. 24

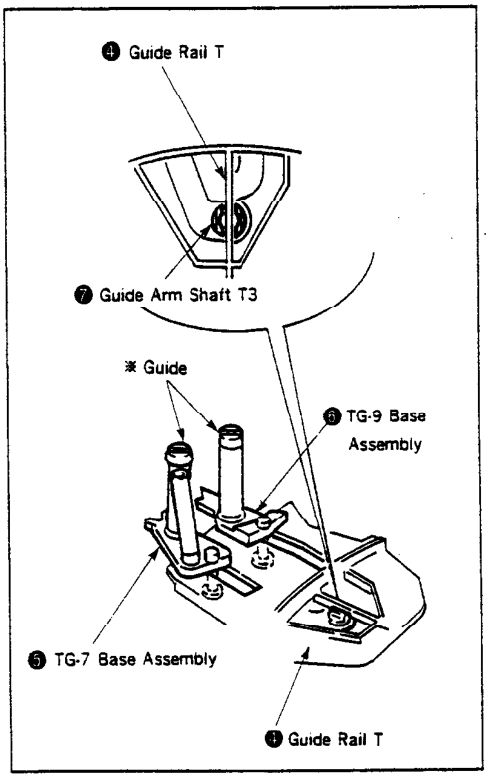

❹ Guide Rail T
❼ Guide Arm Shaft T3
※ Guide
❻ TG-9 Base Assembly
❺ TG-7 Base Assembly
❹ Guide Rail T

Fig. 25

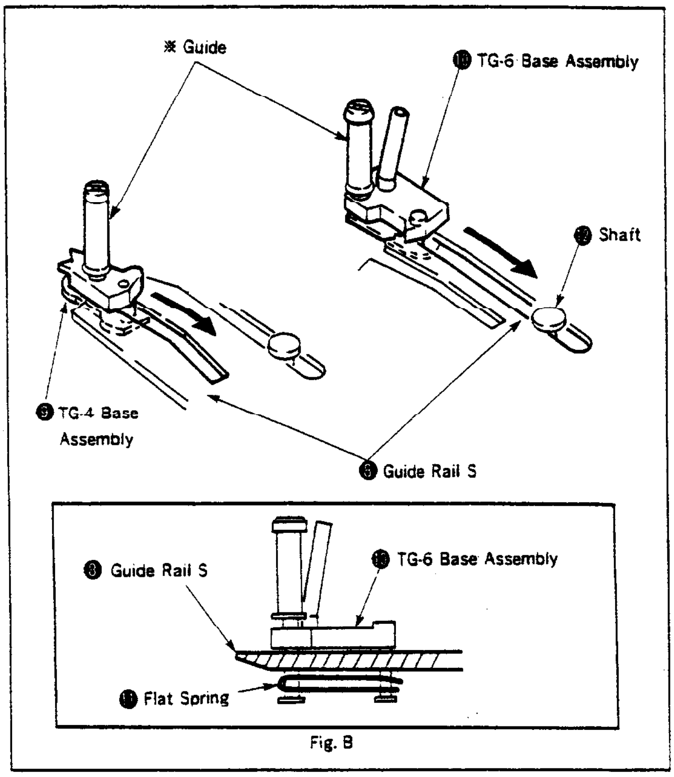

※ Guide
❿ TG-6 Base Assembly
⓬ Shaft
❾ TG-4 Base Assembly
❽ Guide Rail S
❽ Guide Rail S
❿ TG-6 Base Assembly
⓫ Flat Spring

Fig. B

Fig. 26

13 PINCH PRESS ARM ASSEMBLY (Fig. 27)

Removal

Referring to 1-1, remove the cassette compartment holder assembly.

Referring to 3-7, remove the LS chassis.

Remove the screw ❶, and then, pinch press arm assembly ❷.

2. Mounting

1) As shown in A, apply half a drip of molyton grease to an arrowindicated part of a boss hole.
2) As shown in Fig. B, apply half a drip of molyton grease each to the pinch press arm assembly ❷ at 3 places.
3) Put the pin ❹ of the pinch press arm assembly ❷ in the groove of the cam B ❸.
4) Fix. with the screw ❶.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 1-1, mount the cassette compartment holder assembly.

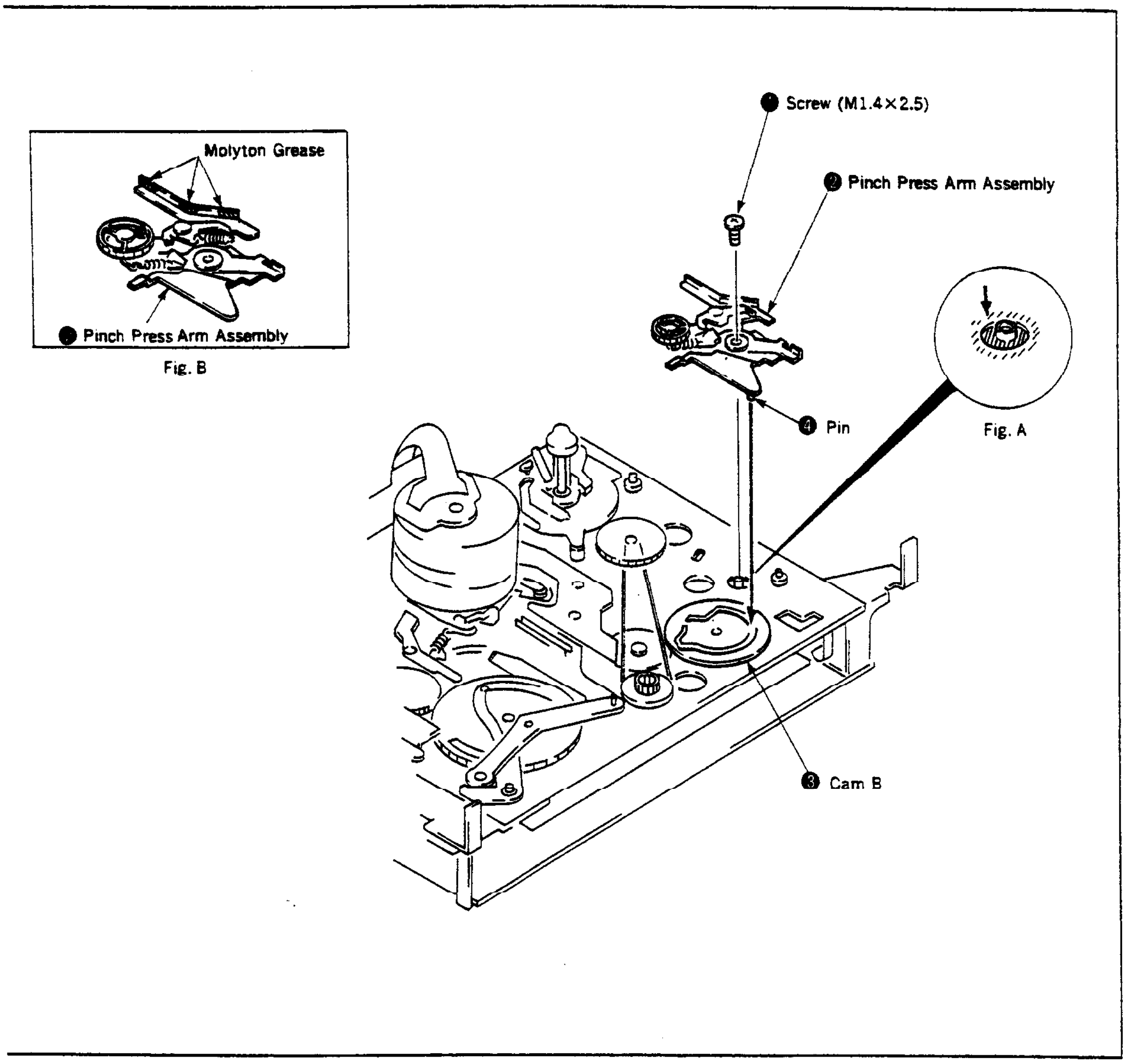

Molyton Grease
❷ Pinch Press Arm Assembly
Fig. B
❶ Screw (M1.4×2.5)
❷ Pinch Press Arm Assembly
❹ Pin
Fig. A
❸ Cam B

Fig. 27

3-14 GL SLIDER ASSEBLY (Fig. 28)

1. Removal

1) Refering to 1-1, remove the cassette compartment holder assembly.
2) Referring to 3-7, remove the LS chassis assembly.
3) Referring to 3-15, remove the cam A.
4) Shift the GL slider assembly ❹ in a direction of the arrowⒶ.
5) Remove the screw ❶, and then, GL support S ❷.
6) Remove the lock washer ❸, and then, GL slider assembly ❹.

2. Mounting

1) Fit the claw ❺ of the GL slider assembly ❹ in the qroove of the GL support T ❼, and put the roller ❻ in the long hole of the chassis.
2) Stop with the lock washer ❸.
3) Shift the GL slider assembly ❹ in a direction of the arrowⒶ.
4) Fit the claw ❽ of the GL support ❷ in the part of the chassis marked with ⋇ and place the dowel ❾ in the hole of the chassis.
5) Fix with the screw ❶.
6) Referring to 3-7, mount the LS chassis assembly.
7) Referring to 1-1, mount the cassette compartment holder assembly.

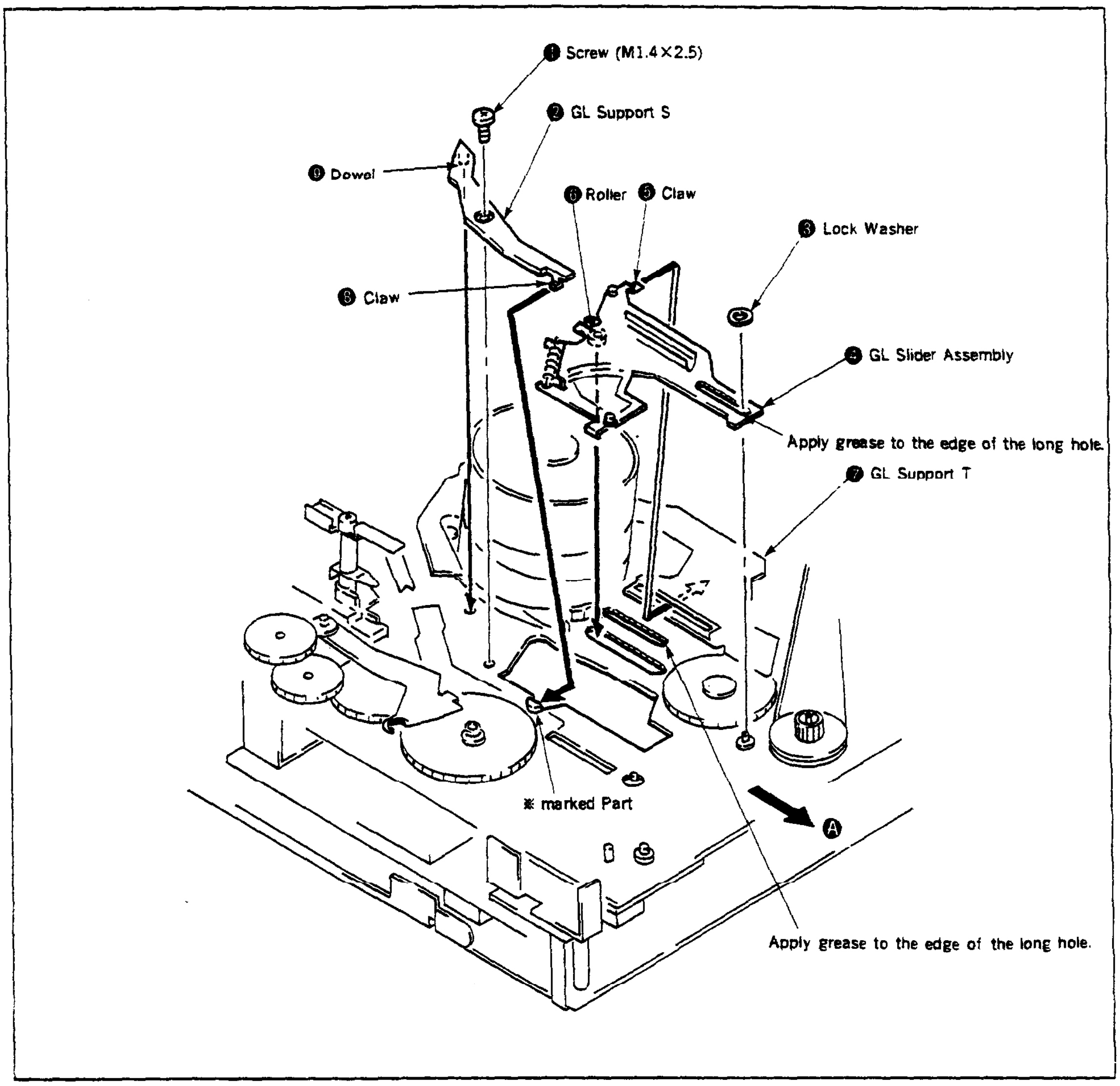

❶ Screw (M1.4×2.5)
❷ GL Support S
❾ Dowel
❻ Roller
❺ Claw
❸ Lock Washer
❽ Claw
❹ GL Slider Assembly
Apply grease to the edge of the long hole.
❼ GL Support T
⋇ marked Part
Ⓐ
Apply grease to the edge of the long hole.

Fig. 28

3-15 PHASE ADJUSTMENT(Fig. 29)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Referring to 3-7, remove the LS chassis. (Wen this is done, one of the BLANK, REC and READY modes must be selected.)
3) Remove the two screws ❶, and remove the TG-1 cam base ❷ by moving it in a direction of the arrow Ⓐ. (Remove the notch ● from the groove of the No. 3 gear shaft.)
4) Remove the screw ❸, and remove the gear retainer ❹ by sliding it in a direction of the arrow Ⓑ.
5) Remove the arm assembly ❺, No. 0 gear ❻, No. 1 gear assembly ❼, No. 2 gear assembly ❽, No. 3 gear assembly ❾, lock washer ❿, and then, mode gear assembly ⓫, respectively.
6) Being careful not to lose the LS roller ● of the LS arm, remove the LS arm assembly ● and EJ arm ●, respectively.
7) Remove the screw ●, and then, cam A ●.
8) Referring to 3-13 3), remove the pinch press arm assembly.
9) Remove the screw ●, and then, cam B ●.

2. Adjustment and Mounting

1) Face the hole ⓐ of the mode gear assembly ● to a direction of the arrow Ⓐ, move the GL slider assembly ● in a direction of the arrow Ⓑ, apply molyton grease to the pin of the GL slider assembly ●, and mount the LS roller ●. (Fig. 30)
2) Set a direction of the cam A ● so that the hole ⓒ of the cam A ● will be aligned with the hole of the mechanical chassis. (Fig. 31)
3) Move the GL slider ● so that the LS roller ● will be placed into the groove ⓓ of the cam A ●. At the same time, engage the mode gear assembly ● with the gear of the relay gear A ●, and mount the cam A ●. Insert a stick of about ϕ1.5mm in the hole ⓒ of the cam A ●. (Fig. 31)
4) Align the hole ⓔ of the cam B ● with the hoie of the mechanical chassis. At the same time, engage the relay gear B ● with the gear and mount it. (Fig. 32)
5) Referring to 3-13, mount the pinch press arm assembly.
6) Align the hole ⓕ of the No. 3 gear assembly ❾ with the hole of the mechanical chassis, and at the same time, engage the mode gear assembly ● with the gear to mount. (Fig. 33)
7) Mount the No. 2 gear assembly ❽, No. 1 gear assembly ❼ and No. 0 gear ❻ in that order. Mount the arm assembly ❺ to the shaft and put the pin ● in the groove of the No. 3 gear assembly ❾, (Fig. 34)
8) Put the TG-1 cam base ❷ in place, fit the notch ● to the shaft and shift it in an arrow direction, and mount the screws ● and ● in that order. (Fig. 35)
9) Put the gear retainer ❹ in place, slide it in an arrow direction and fix it with the screw ❸. (Fig. 36)
10) Seeing to it that the EJ arm ● and the LS roller ● of the LS arm assembly ● are put in the groove ⓖ of the cam A ●, mount them in that order. (Fig. 29 and Fig. 30)
11) Referring to 3-7, mount the LS chassis assembly.
12) Referring to 1-1, mount the cassette compartment holder assembly.

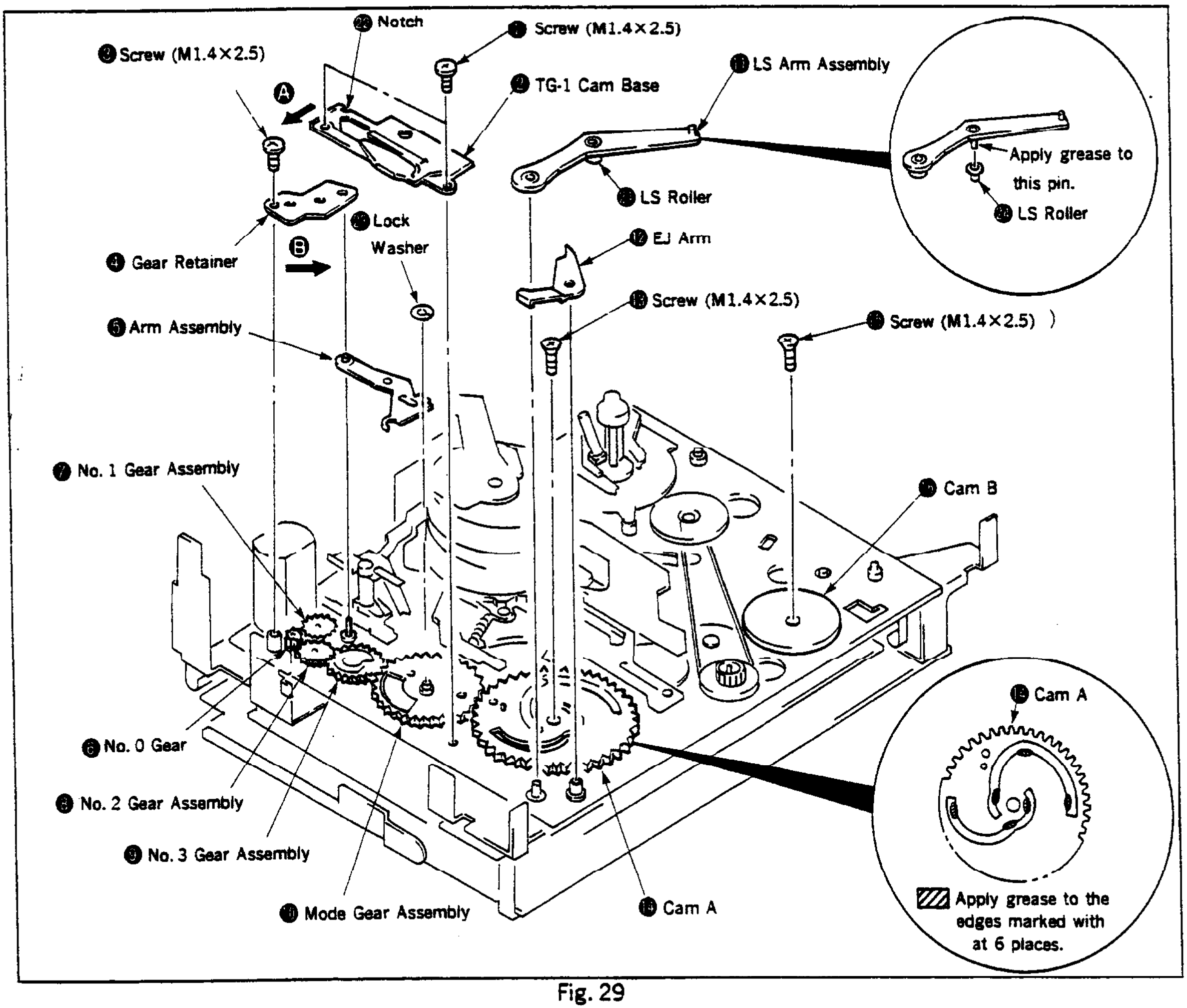

● Notch
❶ Screw (M1.4×2.5)
❸ Screw (M1.4×2.5)
Ⓐ
❷ TG-1 Cam Base
● LS Arm Assembly
Apply grease to this pin.
● LS Roller
● LS Roller
❿ Lock Washer
● EJ Arm
❹ Gear Retainer
Ⓑ
● Screw (M1.4×2.5)
● Screw (M1.4×2.5)
❺ Arm Assembly
❼ No. 1 Gear Assembly
● Cam B
● Cam A
❻ No. 0 Gear
❽ No. 2 Gear Assembly
❾ No. 3 Gear Assembly
⓫ Mode Gear Assembly
● Cam A
▨ Apply grease to the edges marked with at 6 places.

Fig. 29

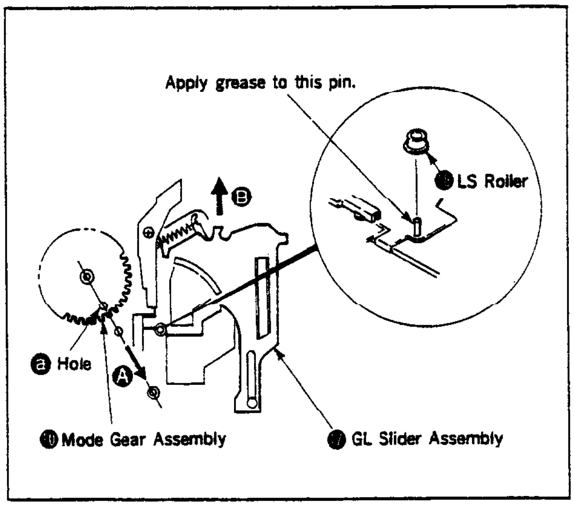

Apply grease to this pin.
⓳ LS Roller
Ⓑ
ⓐ Hole
Ⓐ
❿ Mode Gear Assembly
⓱ GL Slider Assembly

Fig. 30

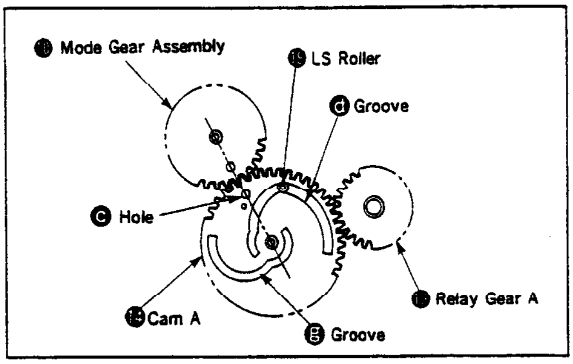

❿ Mode Gear Assembly
⓳ LS Roller
ⓓ Groove
ⓒ Hole
⓮ Cam A
ⓑ Groove
⓯ Relay Gear A

Fig. 31

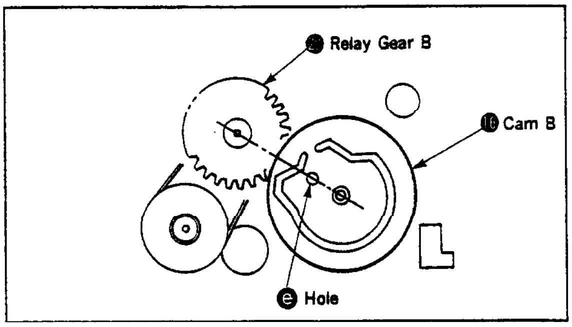

⓴ Relay Gear B
⓰ Cam B
ⓔ Hole

Fig. 32

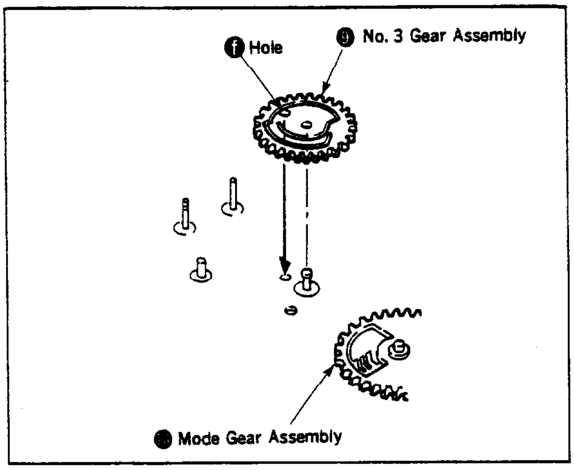

ⓕ Hole
❾ No. 3 Gear Assembly
❿ Mode Gear Assembly

Fig. 33

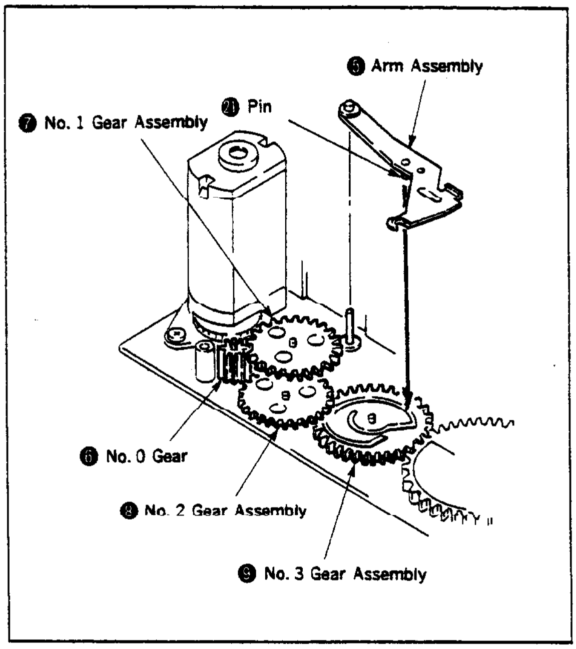

❺ Arm Assembly
㉑ Pin
❼ No. 1 Gear Assembly
❻ No. 0 Gear
❽ No. 2 Gear Assembly
❾ No. 3 Gear Assembly

Fig. 34

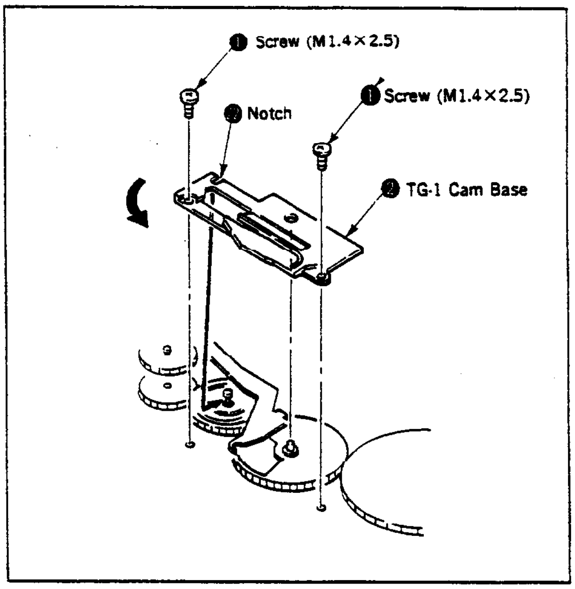

❶ Screw (M1.4×2.5)
ⓖ Notch
❶ Screw (M1.4×2.5)
❷ TG-1 Cam Base

Fig. 35

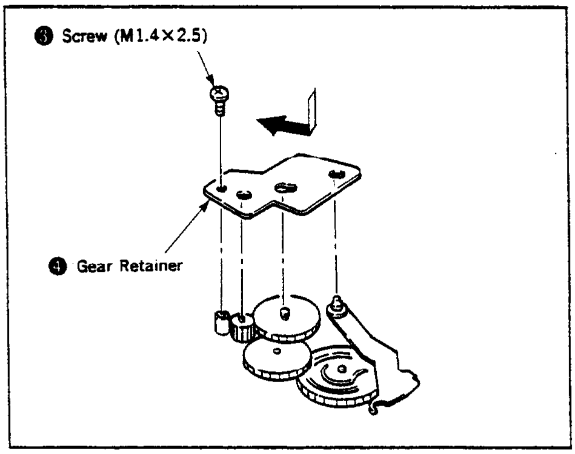

❸ Screw (M1.4×2.5)
❹ Gear Retainer

Fig. 36

.6 GEAR TRAIN OPERATION CHECK (Fig. 37)

Removal

Referring to 1-1, remove the cassette compartment holder assembly.

Referring to 3-7, remove the LS chassis.

Referring to 3-17, remove the loading motor.

Check

Insert the tip of tweezers into the hole a of the cam A ❶.

Rotate the cam A ❶ by about two thirds of a turn in a direction of the arrow Ⓐ, and then, in a direction of the arrow Ⓑ by the same amount. Repeat this 3 times.

When this is done, check that each, gear, the CL slider assembly and LS arm assembly rotate smoothly, and that no load is applied to them.

4) At the same time, check that the LS roller ❷ is located almost at the end point of the groove of the cam A ❶ when the gear train comes into contact with the stoppers at both ends.

Note : When rotating the cam A ❶ with the tip of tweezers, etc., be careful not to scratch the mechanical chassis.

3. Mounting

1) Referring to 3-17, mount the loading motor.
2) Referring to 3-7, mount the LS chassis assembly.
3) Referring to 1-1, mount the cassette compartment holder assembly.

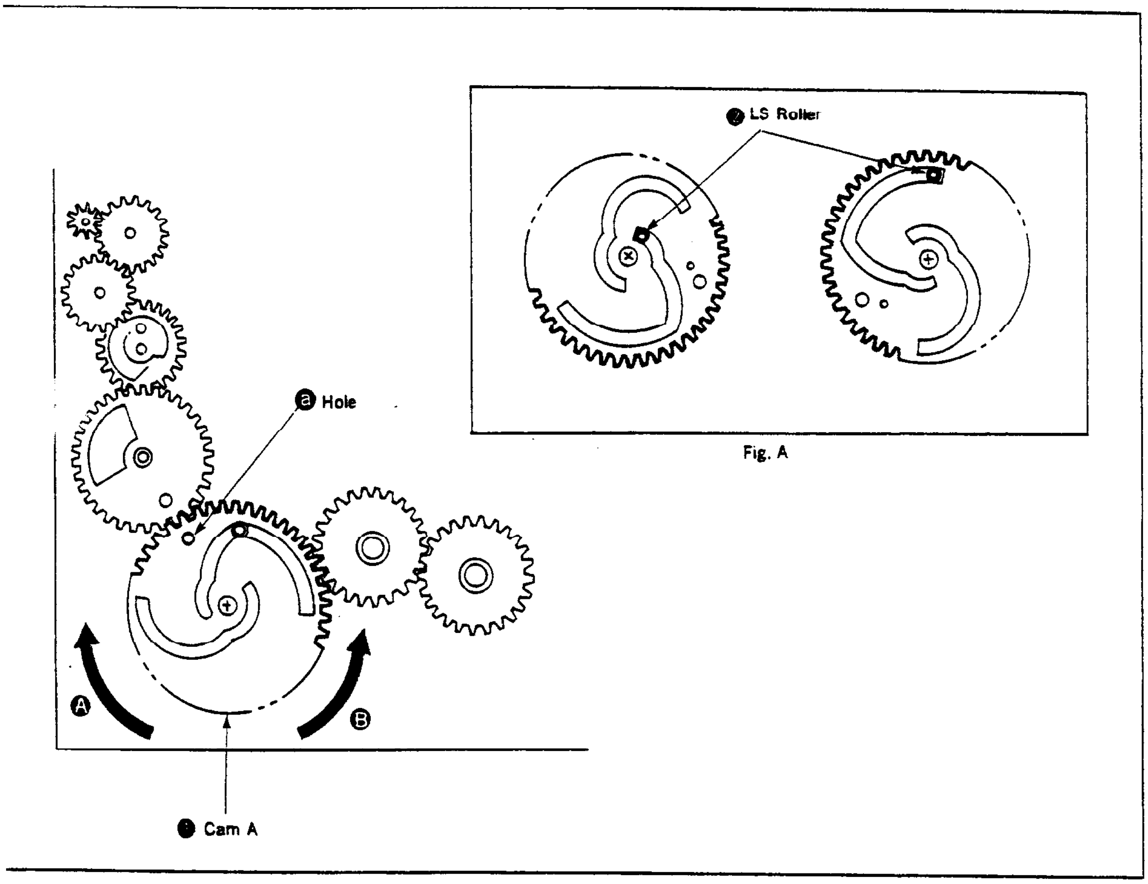


Fig. A

Fig. 37

3-17 LOADING MOTOR ASSEMBLY (Fig. 38)

1. Removal

1) Remove the LB-12 board.
2) Remove the connector ❶.
3) Remove the screws ❷ and ❸, and remove the loading motor assembly ❹ in an arrow direction.

2. Mounting

1) Put the pin ❺ of the loading motor assemmbly ❹ in the hole of the mechanical chassis, and mount it with the screws ❷ and ❸ in that order.
2) Mount the connector ❶.
3) Mount the LB-12 board.

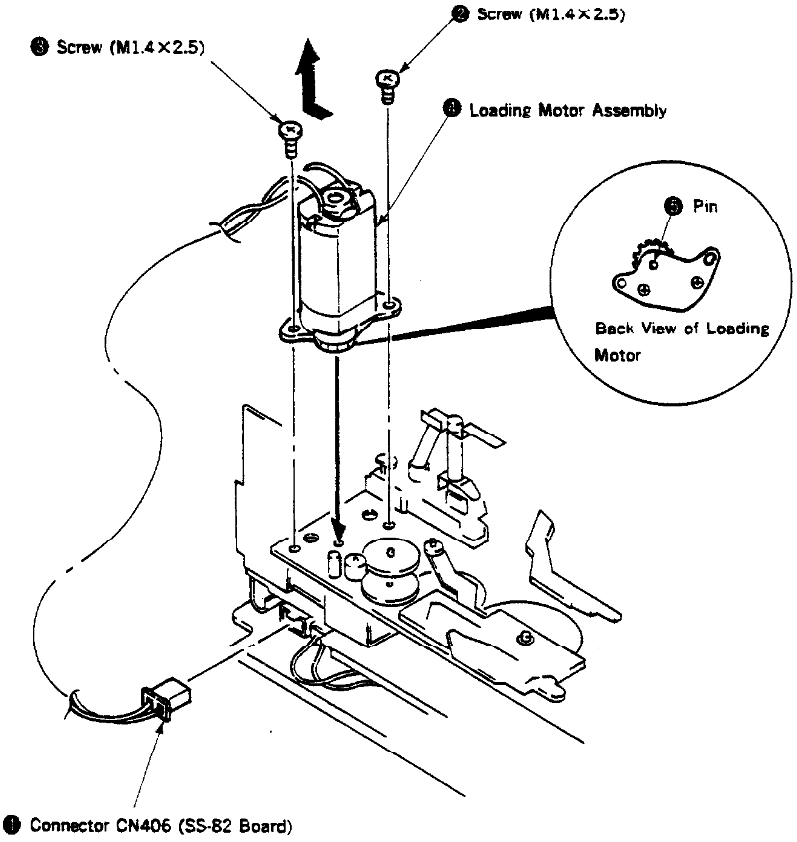

❷ Screw (M1.4×2.5)
❸ Screw (M1.4×2.5)
❹ Loading Motor Assembly
❺ Pin
Back View of Loading Motor
❶ Connector CN406 (SS-82 Board)

Fig. 38

3-18 GUIDE RAIL BASE 1 ASSEMBLY (Fig. 39)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Unskate the LS chassis a little.
3) Remove the two screws ●, and then, guide rail base 1 assembly ●.

Note : Be careful not to lose the spacers inserted in the parts ⓐ and ⓑ of the guide rail base 1 assembly ●. (Fig. B)

2. Mounting

1) Apply half a drip each of molyton grease at 2 places on the back of the guide rail base 1 assembly. (Fig. A)
2) Put the pin ● of the guide rail base 1 assembly ● in the notch of the chassis, and tighten the two screws ● with a torgue of 0.6kg•cm.
3) Referring to 1-1, mount the cassette compartment holder assembly.

Note1 : Mount paying attention to the number of spacers inserted and their locations.

Note2 : When tightening the screws, be careful not to bend the TG-2 upper flange ● with a screwdriver bit.

Note3 : Note that the part c of the guide rail base 1 assembly is easily broken. (Fig. B)

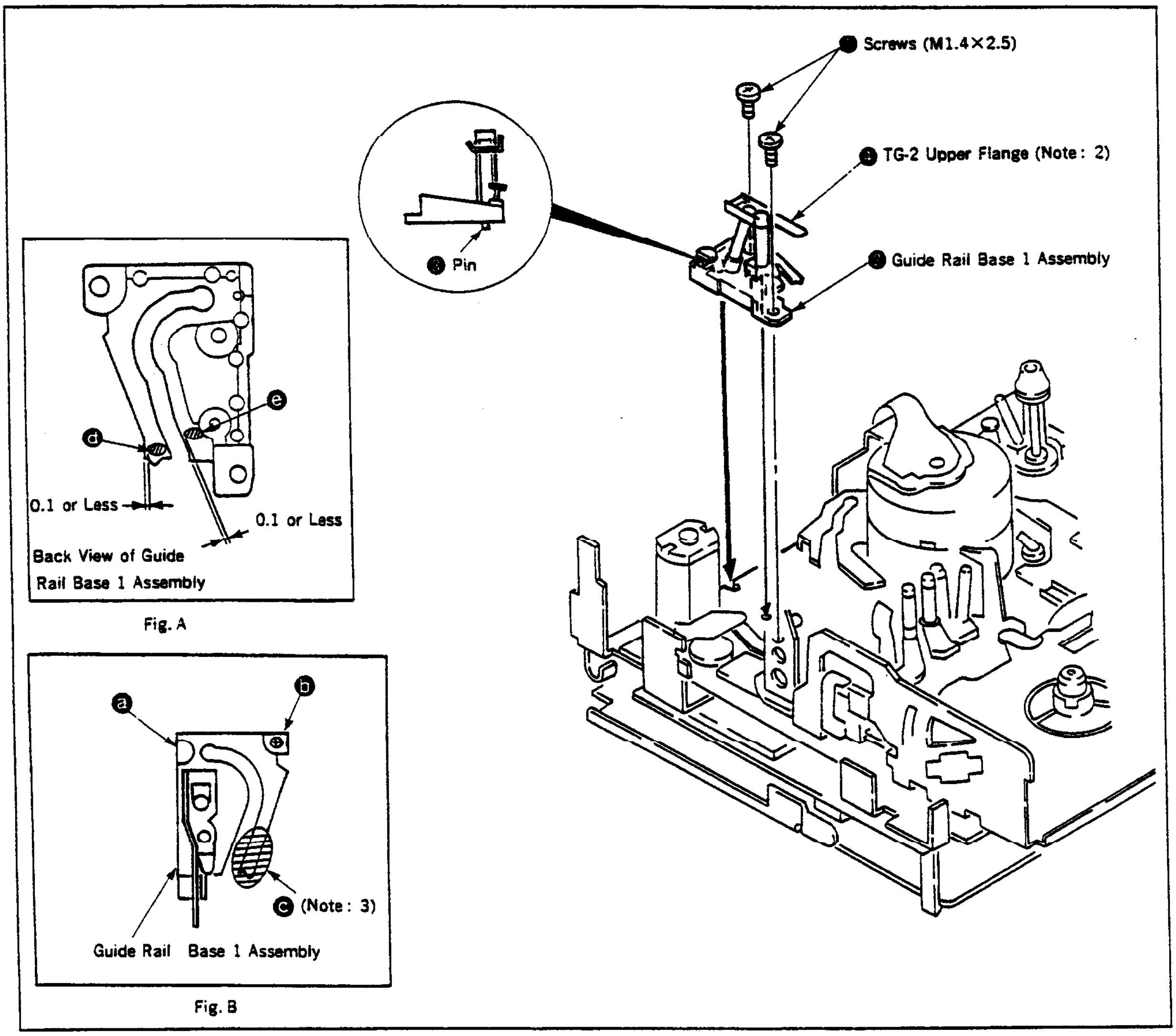

● Screws (M1.4×2.5)
● TG-2 Upper Flange (Note: 2)
● Guide Rail Base 1 Assembly
● Pin
ⓔ
ⓓ
0.1 or Less
0.1 or Less
Back View of Guide Rail Base 1 Assembly
ⓐ
ⓑ
ⓒ (Note: 3)
Guide Rail Base 1 Assembly

Fig. A

Fig. B

図39.

3-19 GUIDE RAIL BASE 2 ASSEMBLY (Fig. 40)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Referring to the Service Manual, open the board in the back of the mechanical chassis.
3) Remove the four screws ●, and then, frame B assembly ● in a direction of the arrowⒶ.
4) Unskate the LS chassis a little.
5) Remove the two screws ●, and then, guide rail base 2 assembly ● in a direction of the arrowⒷ.

Note : Be careful not to hit the drum with a screwdriver bit because the screws are located closed to a drum lead.

2. Mounting

1) Apply half a drip of molyton grease each to 4 places on the back of the guide rail base 2 assembly. (Fig. A)
2) As shown in Fig. B, apply the striking parts of the guide rail base 2 assembly ● to the lower drum, and slide in an arrow direction to fit.
3) Pushing the part ⋇ of the guide rail base 2 assembly ● lightly in a direction of ⓔ (Fig. B), tighten the two screws ● with a torque of 0.8kg•cm.

Note : Note that the part f is easily broken.

4) Mount the frame B assembly with the four screws ●.
5) Mount the opened board to the back of mechanical chassis.
6) Referring to 1-1, mount the cassette compartment holder assembly.

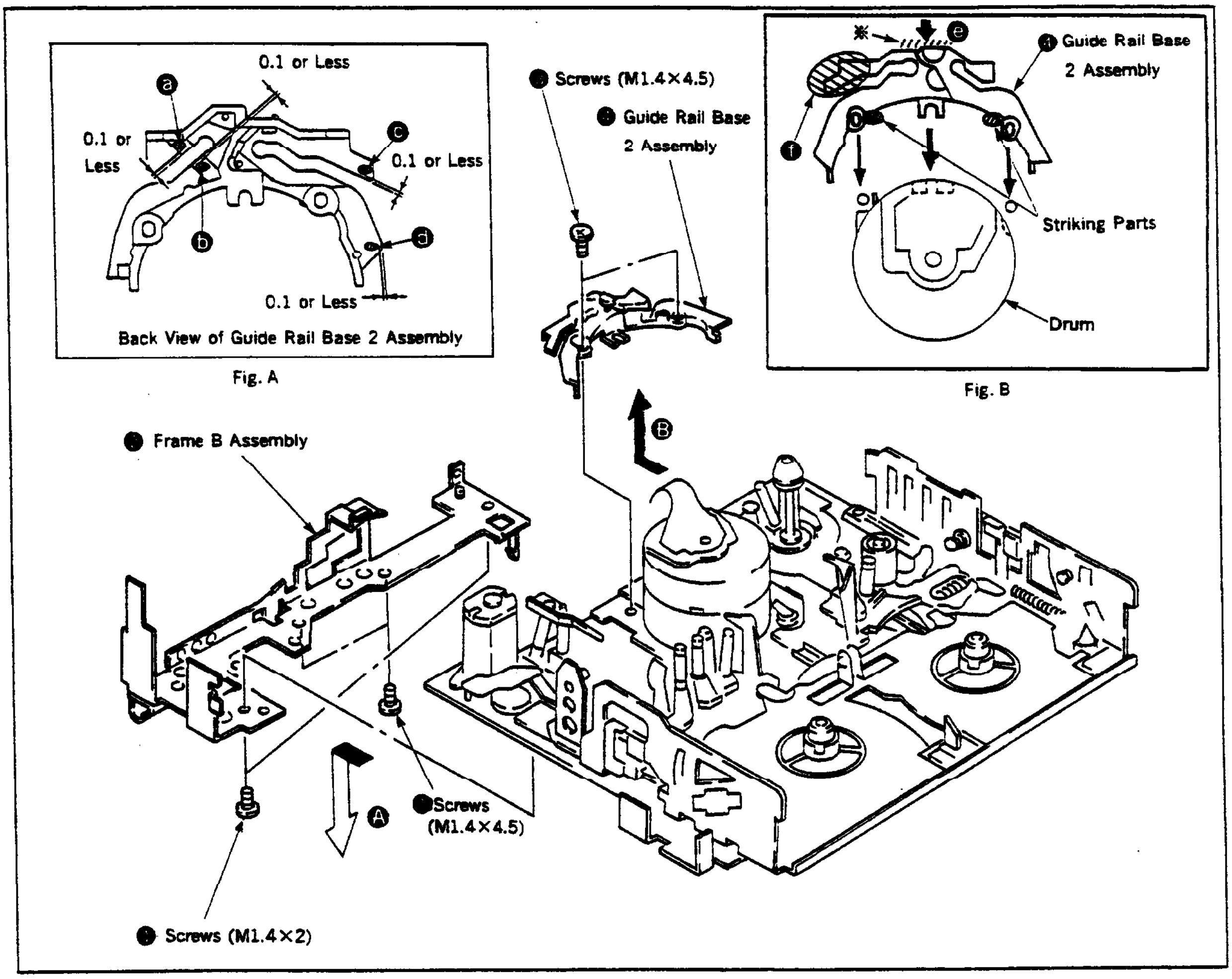

0.1 or Less
ⓐ
0.1 or Less
ⓒ
0.1 or Less
ⓑ
ⓓ
0.1 or Less
Back View of Guide Rail Base 2 Assembly
Fig. A
● Screws (M1.4×4.5)
● Guide Rail Base 2 Assembly
⋇
ⓔ
● Guide Rail Base 2 Assembly
ⓕ
Striking Parts
Drum
Fig. B
Ⓑ
● Frame B Assembly
Ⓐ
●Screws (M1.4×4.5)
● Screws (M1.4×2)

Fig. 40

3-20 GUIDE RAIL BASE 3 ASSEMBLY (Fig. 41)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Remove the flexible rotatry shaft ❸.
3) Remove the two screws ❶. Remove the guide rail base 3 assembly ❷ in an arrow direction, seeing to it that it does not hitch on the capstan housing.

Note : Handle the ※ marked part carefully because it is easily broken.

2. Mounting

1) Apply half a drip of molyton grease each to 2 places on the back of the guide rail base 3 assembly ❷. (Fig. A)
2) Mount the guide rail base 3 assembly ❷, seeing to it that it does not hitch on the capstan housing.
3) Tighten the two screws ❶ with a torque of 0.6kg•cm.
4) Mount the flexible rotary shaft ❸.
5) Referring to 1-1, mount the cassette compartment holder assembly.

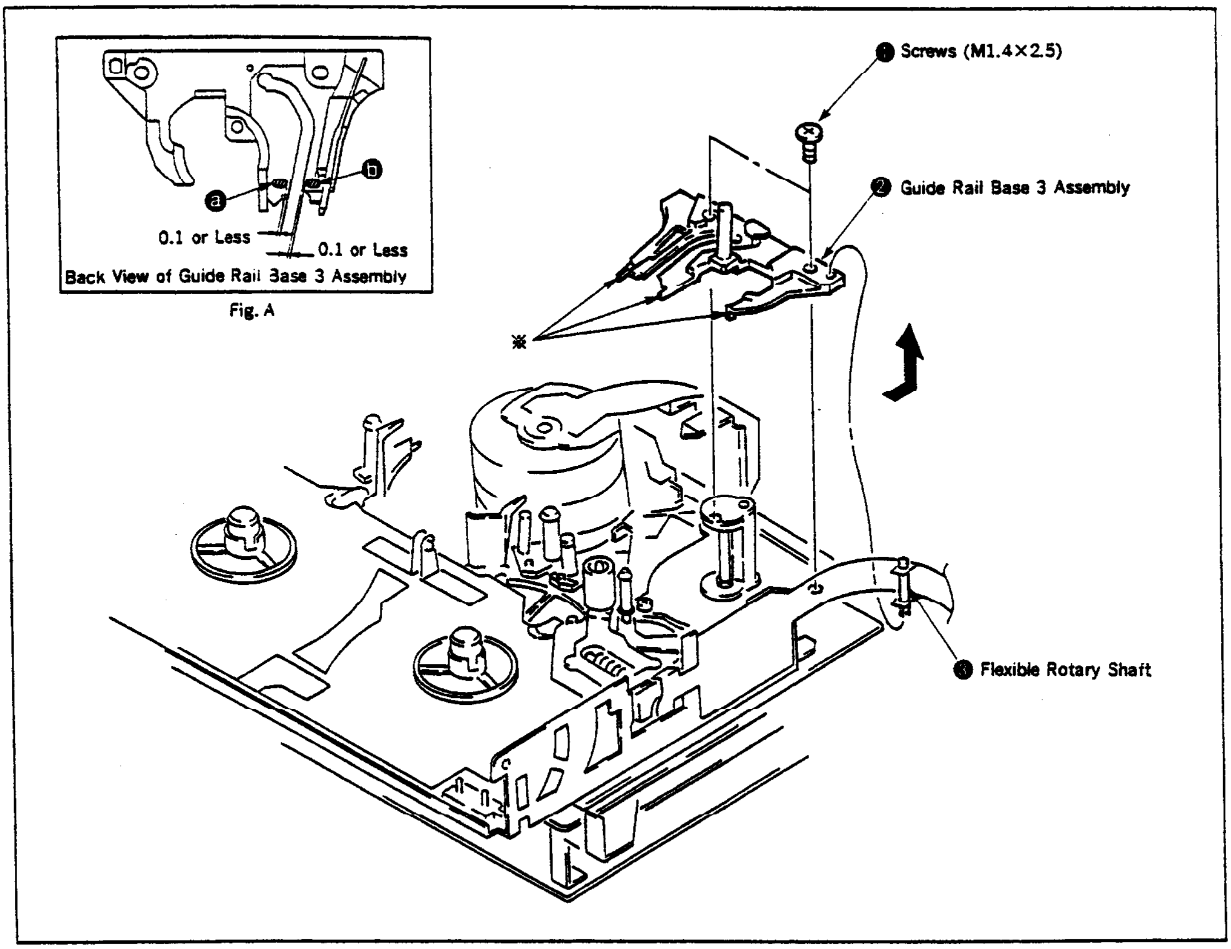

a
b
0.1 or Less
0.1 or Less
Back View of Guide Rail Base 3 Assembly
Fig. A
❶ Screws (M1.4×2.5)
❷ Guide Rail Base 3 Assembly
※
❸ Flexible Rotary Shaft

Fig. 41

3-21 CAPSTAN MOTOR ASSEMBLY (Fig. 42)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Referring to 3-20, remove the guide rail base 3 assembly.
3) Remove the connector ● of the capstan motor assembly ●.
4) Remove the screw ●. Disengaging the gear of the conversion gear assembly ●, remove the capstan motor assembly ● in an arrow direction (obliquely).

2. Mounting

1) As shown in Fig. A, incline the capstan motor assembly ● to engage the gear of the capstan motor assembly ● with that of the conversion gear assembly ●, and tighten the screw 3 with a torque of 1kg•cm.

   When this is done, be careful not to damage the gear of the conversion gear assembly ●.
2) Mount the connector 2 to the capstan motor assembly ●.
3) Referring to 3-20, mount the guide rail base 3 assembly.
4) Referring to 1-1, mount the cassette compartment holder assembly.

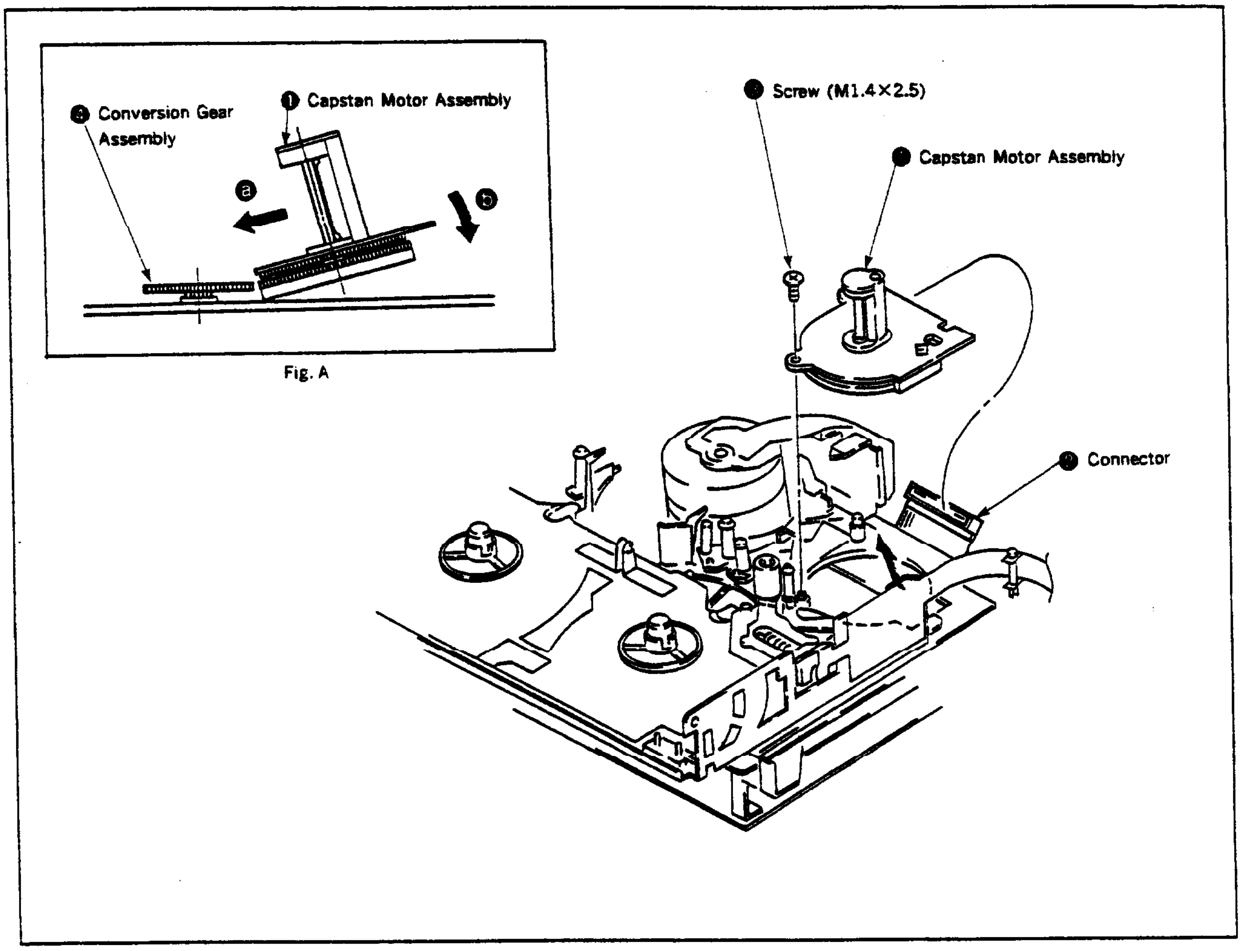

● Conversion Gear Assembly
❶ Capstan Motor Assembly
ⓐ
ⓑ
● Screw (M1.4×2.5)
● Capstan Motor Assembly
● Connector

Fig. A

Fig. 42

3-22 DRUM BASE ASSEMBLY (Fig. 42)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Remove the motor flexible board ● from the board.
3) Referring to 3-19, remove the guide rail base 2 assembly.
4) Remove the two screws ●.
5) Draw out the head flexible board ● carefully from the hole of the mechanical chassis not to damage it, and remove the drum base assembly.

2. Mounting

1) Put the head flexible board ● in the hole of the mechanical chassis and put the positioning pins ● of the drum base in the holes of the mechanical chassis.
2) Tighten the two screws ● with a torque of 0.8kg•cm.
3) Referring to 3-19, mount the guide rail base 2 assembly.
4) Mount the motor flexible board ● to the board.
5) Referring to 1-1, mount the cassette compartment holder assembly.

Note : After mounting, make tape path adjustment in Section 4.

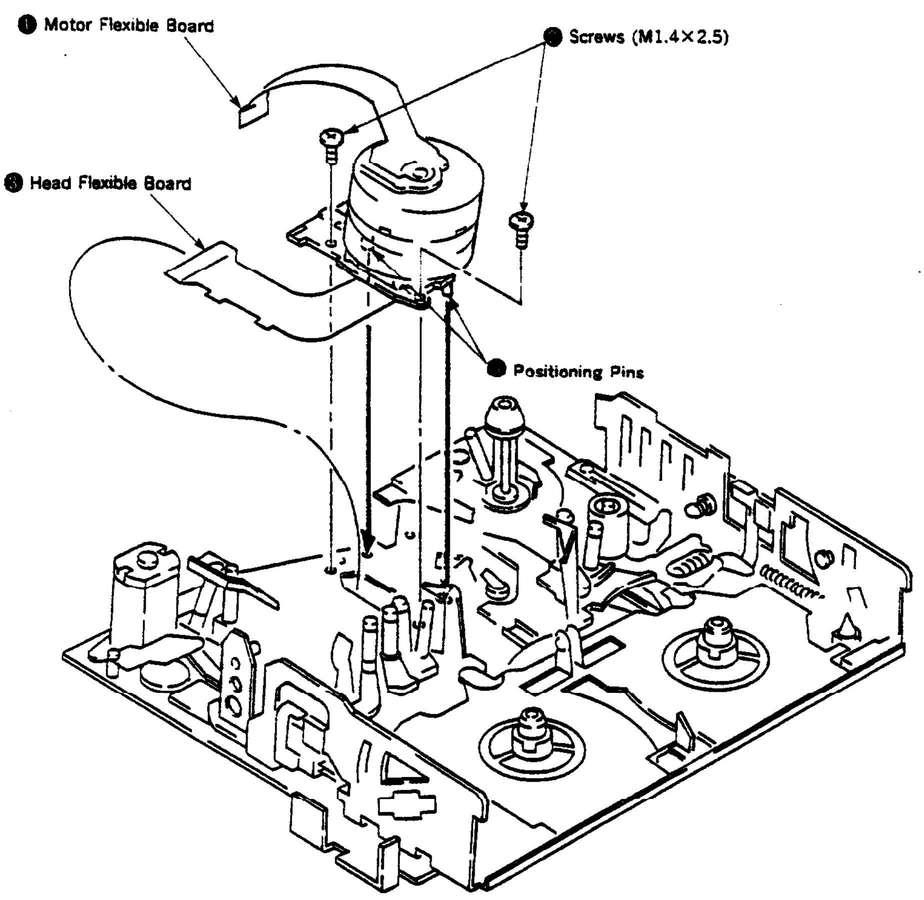


Fig. 42

3-23 DRUM ASSEMBLY (Fig. 43)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Remove the motor flexible board ❶ from the board.
3) Referring to 3-19, remove the guide rail base 2 assembly.
4) Remove the three screws ❷ from the back of the mechanical chassis.
5) Draw out the head flexible board ❸ carefully from the hole of the mechanical chassis not to damage it, and remove the drum assembly ❹.

2. Mounting

1) Put the head flexible board ❸ in the hole of the mechanical chassis, and mount it so that the pins ⓑ and ⓓ will be put in the holes ⓐ and ⓒ shown in Fig. A.
2) Tighten the three screws ❷ with a torque of 0.5kg•cm.
3) Referring to 3-19, mount the guide rail base 2 assembly.
4) Mount the motor flexible board ❶ to the board.
5) Referring to 1-1, mount the cassette compartment holder assembly.

Note : After mounting, make tape path adjustment in Section 4.

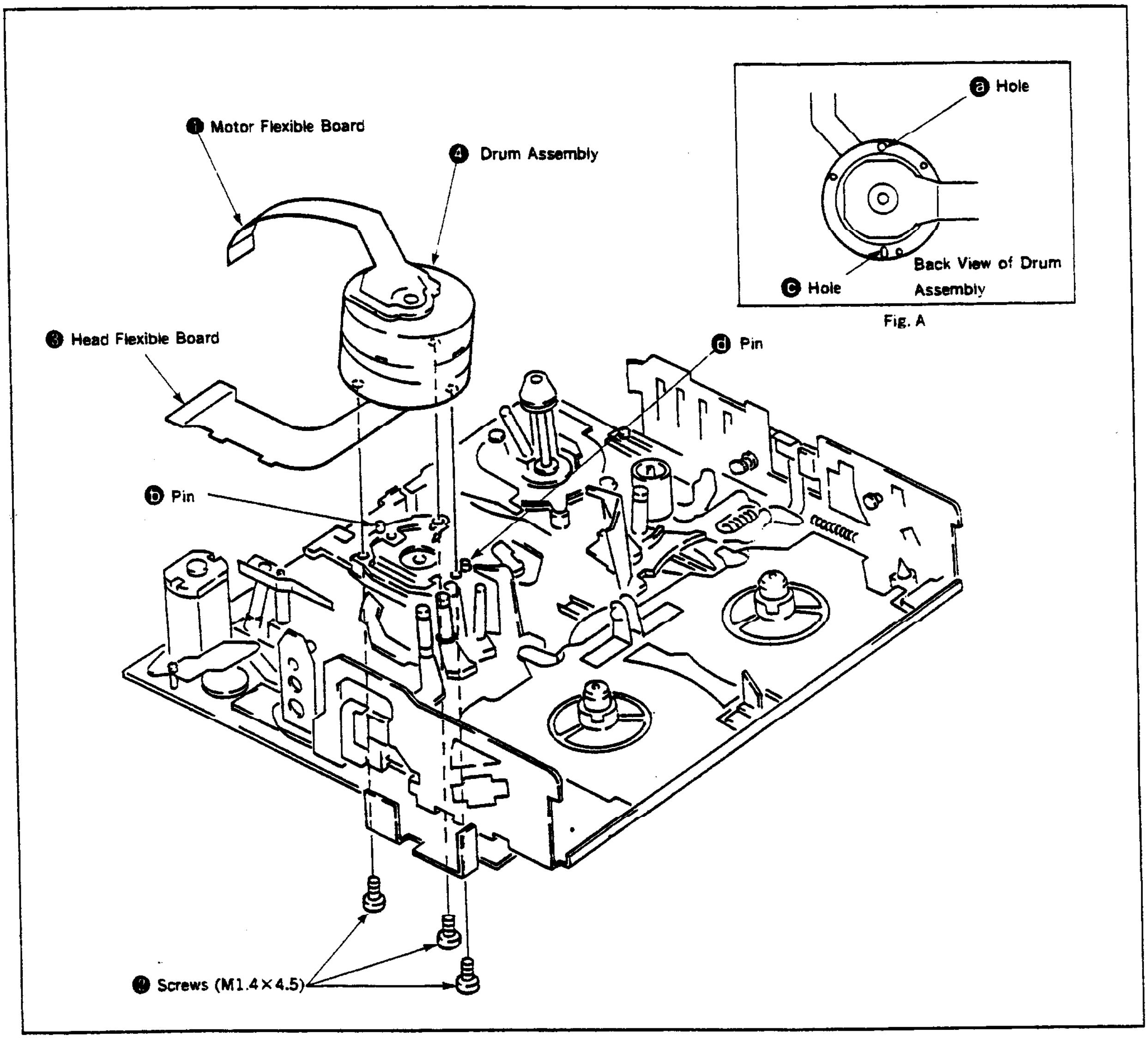
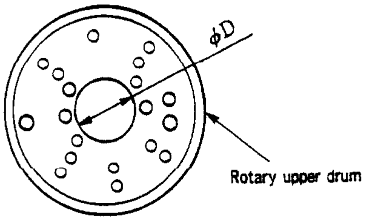

❶ Motor Flexible Board
❹ Drum Assembly
ⓐ Hole
Back View of Drum Assembly
ⓒ Hole
Fig. A
❸ Head Flexible Board
ⓓ Pin
ⓑ Pin
❷ Screws (M1.4×4.5)

Fig. 43

3-24 Replacement of Rotary Upper Drum Assembly

There are two rotary upper drum assembly types, depending on a color mark. (Fig. A in Fig. 45)



NTSC:

A-7049-190-A	Rotary upper drum assembly DGR-32-R-(1)
A-7049-189-A	Rotary upper drum assembly DGR-32-R-(2)

PAL:

A-7049-197-A	Rotary upper drum assembly DGR-37-R-(1)
A-7049-198-A	Rotary upper drum assembly DGR-37-R-(2)

Manufacturing upper dram

RANK	ϕD	MARK	
A	$\phi 8^{+0.0015}_{+0.001}$	Green	−01
B	$\phi 8^{+0.001}_{+0.0005}$	Green, Brown	
C	$\phi 8^{+0.0005}_{0}$	Black	
D	$\phi 8^{0}_{-0.0005}$	Black, Brown	
E	$\phi 8^{-0.0005}_{-0.001}$	Red	−11
F	$\phi 8^{-0.001}_{-0.0015}$	Red, Brown	
G	$\phi 8^{-0.0015}_{-0.002}$	Blue	
H	$\phi 8^{-0.002}_{-0.0025}$	Blue, Brown	

➡

Repairing upper drum

SUFFIX	ϕD	REMARKS	DRUM UPPER
−01	$\phi 8^{+0.001}_{+0.0005}$	Green, Brown	NTSC DGR-32-R-(1) PAL DGR-37-R-(1)
	$\phi 8^{+0.0005}_{0}$	Black	
−11	$\phi 8^{-0.001}_{-0.0015}$	Red, Brown	NTSC DGR-32-R-(2) PAL DGR-37-R-(2)
	$\phi 8^{-0.0015}_{-0.002}$	Blue	

1. Removal

1) Referring to 3-23, remove the drum assembly.
2) Remove the two screws ●. (Fig. 44)
3) Hold the outlet (base) of the guide protector ●, lift it up obliquely. In that state, hold the outer figure of the back yoke ● and remove it. (Fig. 44)

Note : Note that the flexible board and guide protector ● easily come off position because they are only pasted.

4) As shown in Fig. A, set the rotor earth spring ● around spring hook. (Fig. 44)
5) Using a drum screwdriver (Ref. No. J-11), remove the two hexagon socket bolts ●, and then, rotary upper drum assembly ●. (Fig. 45)
6) Using the drum screwdriver (Ref. No. J-11), remove the two hexagon socket bolts ❼, and then, rotor ●. (Fig. A in Fig. 45)

2. Mounting

1) Clean the flange surface ● and the surface of the rotary upper drum assembly ● which comes into contact with it, and make sure that there is no dust or scratch. (Fig. 45)
2) Adjust a direction of the upper drum so that the head contact mold pin ● will be put in the reference hole of the rotary upper drum assembly ●, and push it in lightly. (Fig. 45)

Note : Check visually that the clearance between the upper and lower drums is about 0.05mm.

3) Using the drum screwdriver (Ref. No. J-11), tighten the two hexagon socket bolts ❺ (800g·cm) and rotate it with finger to make sure that there is no abnormality. (Fig. 45)
4) Put the pin ● of the rotor ● in the hole of the rotary upper drum assembly. Using the drum screwdriver (Ref. No. J-11), tighten the hexagon socket bolts ❼. (800g·cm) (Fig. A in Fig. 45)
5) Remove the rotor earth spring ● from the spring hook. Using tweezers, etc., hook it onto the groove of the stator boss ●. (Fig. B in Fig. 45)

Note : See to it that the rotor earth spring ● is not located in the gap between the flange and stator.

6) Hold the outer figure of the back yoke ●, put it on the inner step of the upper drum and insert the other side slowly. (Fig. B in Fig. 44)
7) Tighten the two screws ●. (500g·cm) (Fig. 44)
8) Rotate the upper drum with finger to check that it runs smoothly.
9) Referring to 3-23, mount the drum assembly.

Note : After mounting, be sure to make tape path adjustment in Section 4.

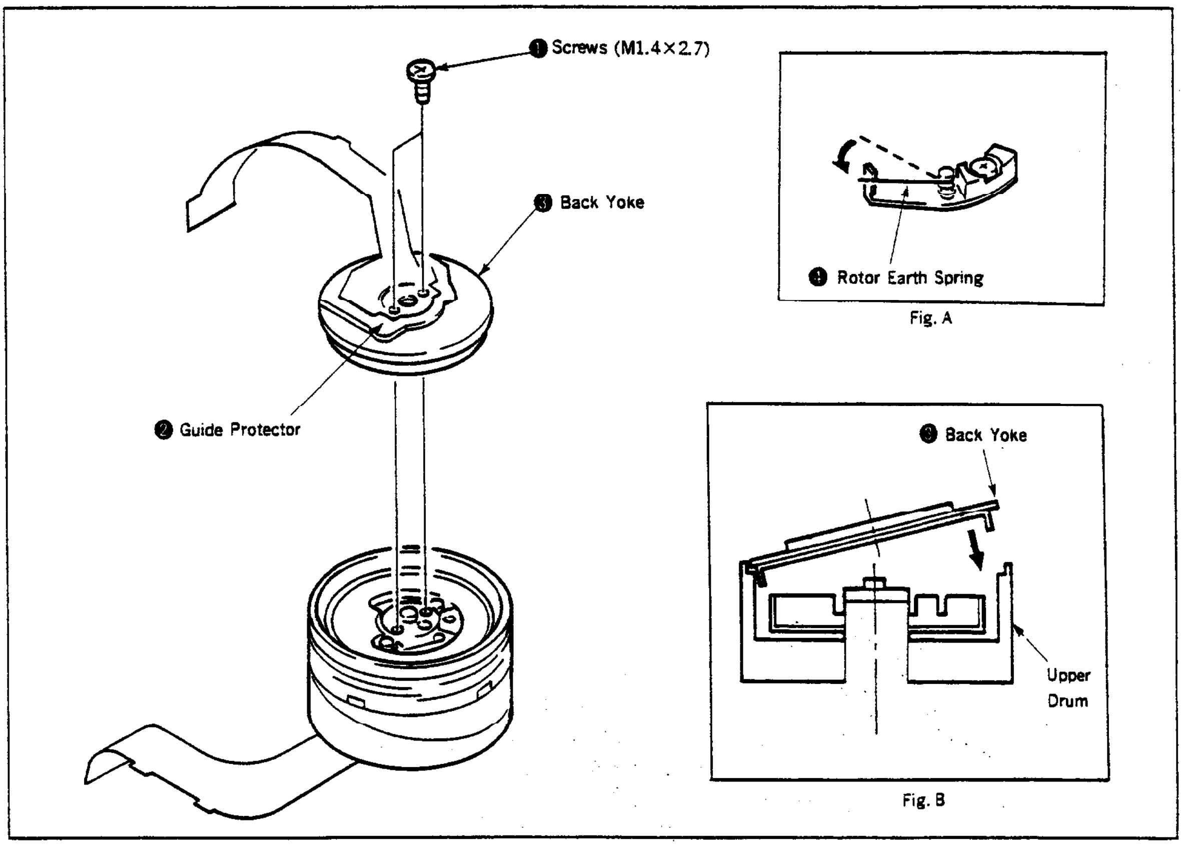

❶ Screws (M1.4×2.7)
❸ Back Yoke
❷ Guide Protector
❹ Rotor Earth Spring
Fig. A
❸ Back Yoke
Upper Drum
Fig. B

Fig. 44

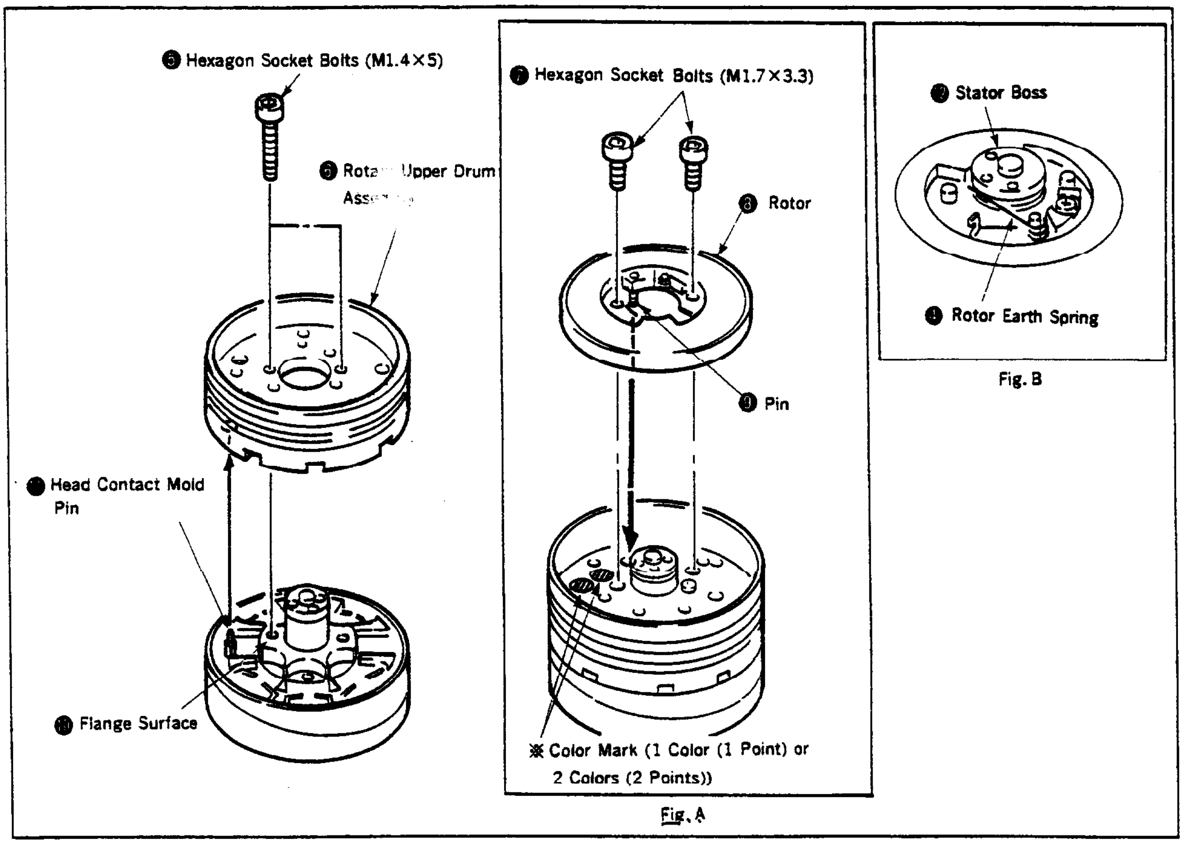

❺ Hexagon Socket Bolts (M1.4×5)
❻ Rota Upper Drum Ass
⓫ Head Contact Mold Pin
⓬ Flange Surface
❼ Hexagon Socket Bolts (M1.7×3.3)
❽ Rotor
❾ Pin
※ Color Mark (1 Color (1 Point) or 2 Colors (2 Points))
Fig. A
❿ Stator Boss
❹ Rotor Earth Spring
Fig. B

Fig. 45

5 REEL TABLE HEIGHT CHECK (Fig. 46)

Removal

Referring to 1-1, remove the cassette compartment holder assembly.

Referring to 3-1, remove the LED base.

Check

Using slide calipers, etc., check that distances from the LS chassis to the S reel table reel resting surface ❷ and T reel table reel resting surface ❸ are ~~3.2 ± 0.5mm~~ respectively.

3. Mounting

1) Referring to 3-1, mount the LED base.
2) Referring to 1-1, mount the cassette compartment holder assembly.

changed values

A: $3.2^{+0.2}_{-0.15}$mm

B: 3.2 ± 0.15mm

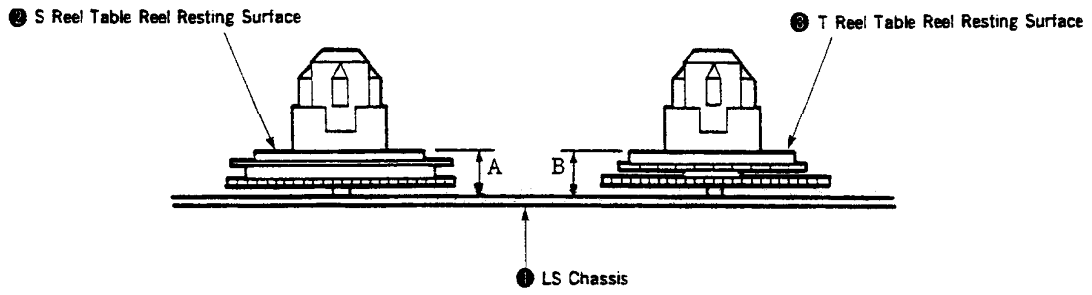

❷ S Reel Table Reel Resting Surface
❸ T Reel Table Reel Resting Surface
A
B
❶ LS Chassis

Fig. 46

6 FWD/RVS TORQUE CHECK

Set the FWD/RVS take-up torque cassette (Ref. No. J-10).

In the FWD mode, check that a T reel torque value is ~~6g·cm — 16g·cm~~ ☚ **changed value** 5 – 15g·cm.

Turn on the REC/REVIEW button and check that an S reel torque value is 25g·cm – 45g·cm.

When the values above are not met, replace the respective reel tables.

3-27 TENSION REGULATOR POSITION ADJUSTMENT

1. Removal

1) Referring to 1-1, remove the cassette compartment holder.

2. Adjustment

1) Set a cassette tape, select the REC mode and run the tape. (Refer to 1-3)
2) With the tape running, check that the distance between TG-1 and TG-2 is ~~9.58±0.2mm.~~ (Fig. 47)
3) When they are not at specified positions, remove the cassette and go through the steps 4) on.
4) Referring to 3-1, remove the LED base.
5) Loosen the screw ❶.

changed value

9.35 – 10.7mm.

6) When TG-1 is located inside (or outside) its specified position, shift the TG-1 adjustment block 2 slightly in a direction of the arrow Ⓐ (or Ⓑ) and fix with the screw ❶. (Fig. 48)
7) Referring to 3-1, mount the LED base.

Note : Use the cassette tape after feeding the tape as far as a middle point.

Note : When taking the steps 4) and 5), remove the cassette tape first.

Note : Check that TG1 is able to move in direction C during REC.

3. Mounting

1) Referring to 1-1, mount the cassette compartment holder assembly.

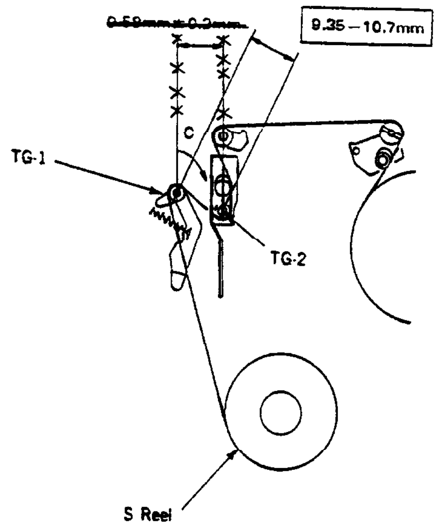


Fig. 47

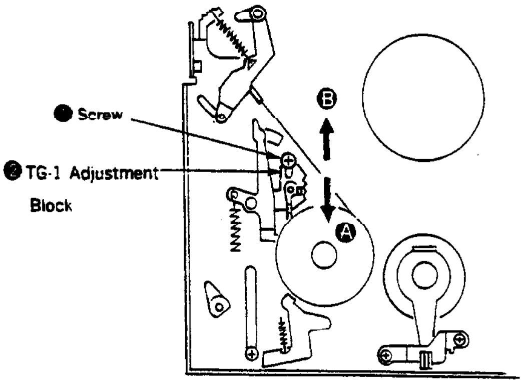


Fig. 48

3-28 FWD BACK TENSION ADJUSTMENT (Fig. 49)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-7, remove the LED base.

2. Adjustment

1) Select the REC mode.
2) Set the tension measurement reel (Ref. No. J-8)❶.
3) Using the dial tension gauge (Ref. No. J-7)❷, measure a tape tension at the outlet of TG-2. When this is done, pull the tape at a rate of 14mm/sec.
4) Change the position of the tention regulator spring ❸ position as shown in Fig. A so that measure center value of the tention is 4 g-6.5g.

Note : When this is done, see to it that the gear ❹ is not engaged with the S reel table.

3. Mounting

1) Referring to 1-1, mount the cassette compartment holder assembly.
2) Referring to 3-1, mount the LED base.

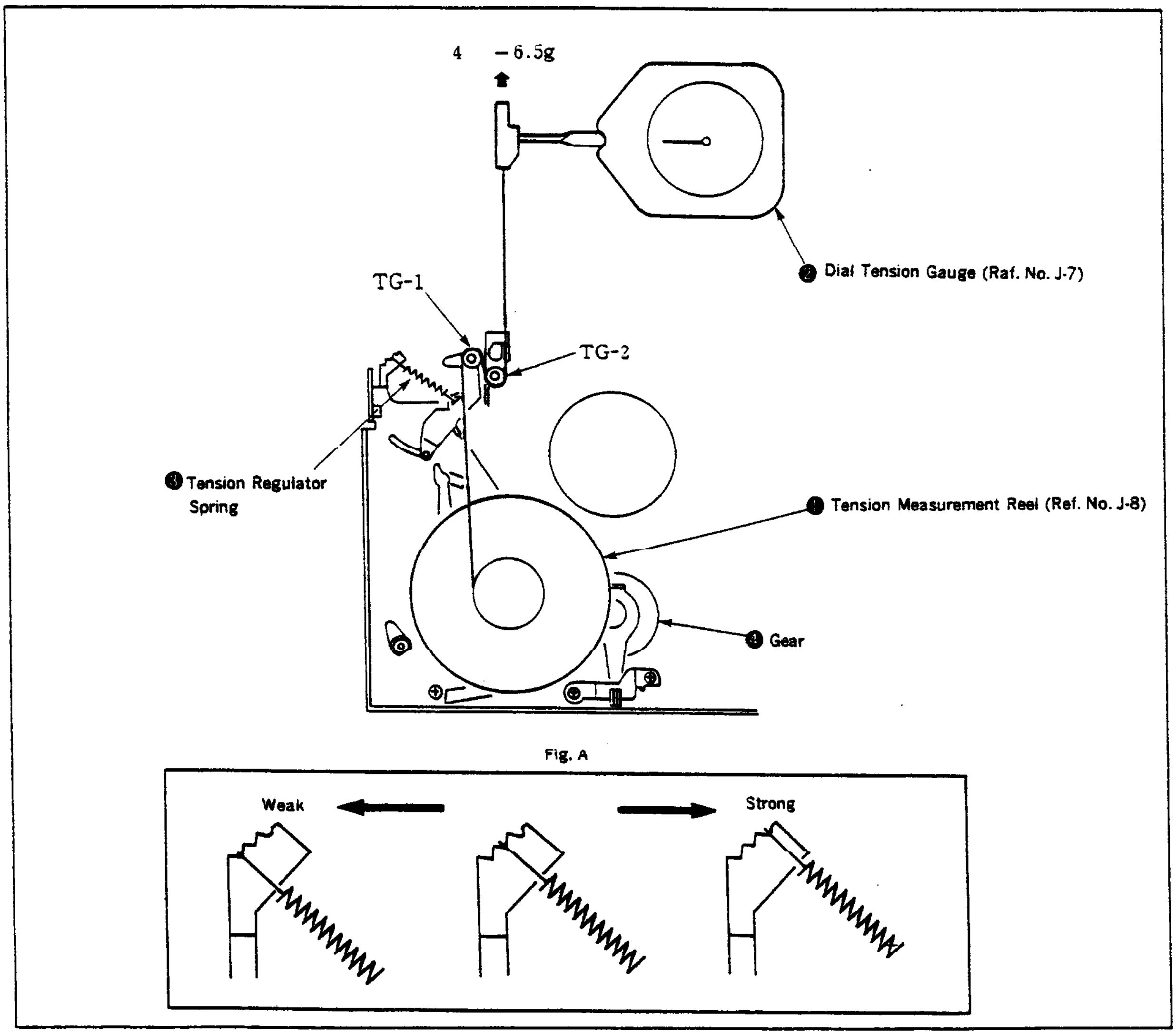

4 −6.5g
❷ Dial Tension Gauge (Raf. No. J-7)
TG-1
TG-2
❸ Tension Regulator Spring
❶ Tension Measurement Reel (Ref. No. J-8)
❹ Gear
Fig. A
Weak
Strong

Fig. 49

4. TAPE PATH ADJUSTMENT

The 8mm video system uses ATF (Automatic Track Finding) which instantaneously controls a tape running speed based on 4 types of pilot signals and performs high-precision tracking.

This does away a tracking control knob and allows accurate track tracing.

On the other hand, however, the ATF system has a problem in adjusting the tape path system. That is, if head tracing is out of order a little, the ATF system automatically corrects it, which means that perfect adjustment cannot be done.

To avoid this problem, a track shift jig had been used to adjust the tape path system. In the FL (Q) mechanism, the ATF system is forcibly operated to shift a tracking amount constantly (approx. 1/4) by setting the PATH mode. So, fine tracking adjustment can be easily done.

No track shift jig is required any more.

Example) For CCD-V11/V88

CN404

4	GND
3	$\overline{\text{CAM ADJ}}$
2	$\overline{\text{TEST}}$
1	$\overline{\text{PATH}}$

The path mode is set by shorting the pins ① and ④.

4-1 PREPARATION FOR ADJUSTMENT

1) Clean the tape running surfaces (tape guides, drum, capstan shaft, pinch roller). (Fig. 51)
2) Set the PATH mode by shorting the TEST pins (CN404 pins ① and ④ for CCD-V11/V88).
3) Connect to an oscilloscope.
4) Play back a tracking alignment tape (NTSC: WR5-1N), (PAL: WR5-1C).
5) Check that a RF waveform is flat at the inlet and outlet of the oscilloscope. (Fig. 50 ⓐ)

   When it is not flat, make adjustment in accordance with the procedures below.

   When the RF waveform is not flat at the inlet/outlet; (Fig.50 ⓑ and ⓒ)

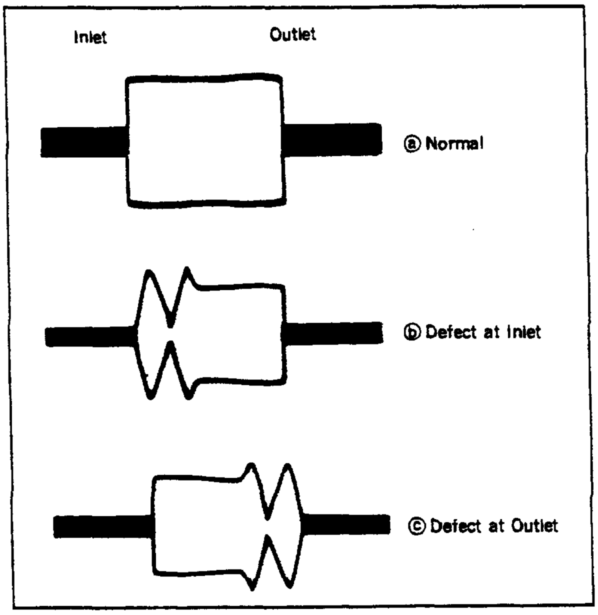

Inlet
Outlet
ⓐ Normal
ⓑ Defect at Inlet
ⓒ Defect at Outlet

Fig. 50

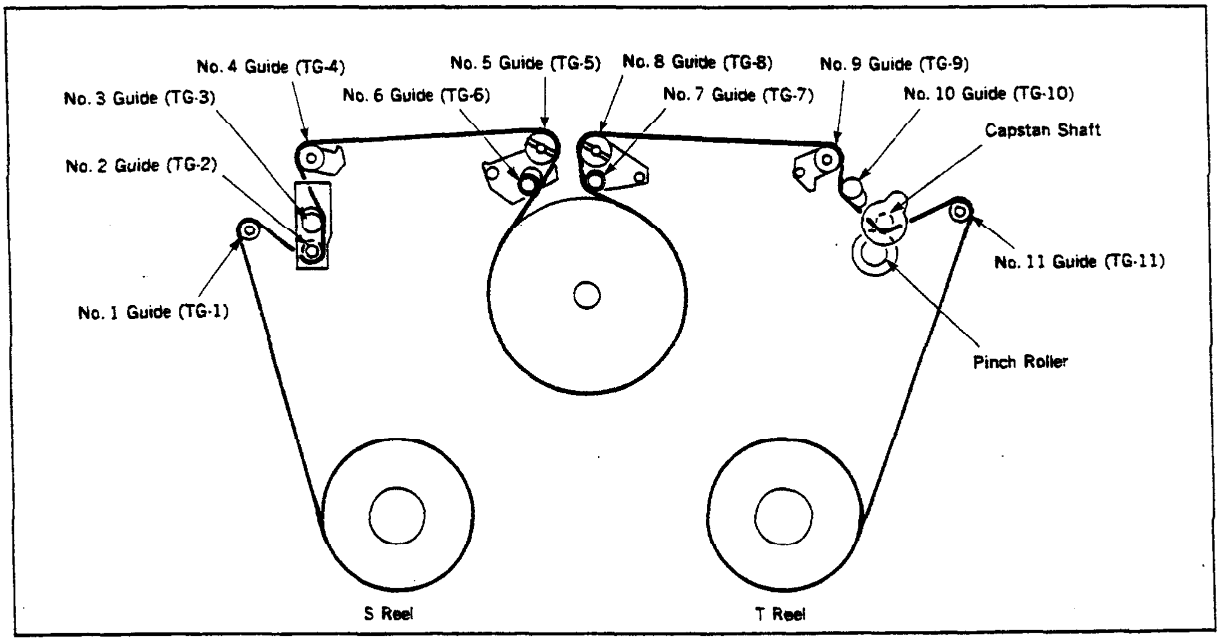

No. 4 Guide (TG-4)
No. 5 Guide (TG-5)
No. 8 Guide (TG-8)
No. 9 Guide (TG-9)
No. 3 Guide (TG-3)
No. 6 Guide (TG-6)
No. 7 Guide (TG-7)
No. 10 Guide (TG-10)
Capstan Shaft
No. 2 Guide (TG-2)
No. 11 Guide (TG-11)
No. 1 Guide (TG-1)
Pinch Roller
S Reel
T Reel

Fig. 51 Tape Guides Location

4-2 TRACKING ADJUSTMENT (Fig. 52)

1) Play back the tracking alignment tape.
2) Loosen the No. 5 guide (TG-5) lock screw ● and turn the No. 5 guide to flatten the waveform at the inlet.
3) Tighten the No. 5 guide (TG-5) lock screw ● to lock the No. 5 guide.
4) Loosen the No. 8 guide (TG-8) lock screw ● and turn the No. 8 guide to flatten the waveform at the outlet.
5) Tighten the No. 8 guide (TG-8) lock screw ● to lock the No. 8 guide. When this is done, make sure that the waveform does not change at the outlet.

Note : Be careful not to loosen the lock screw too much because the guide is easily moved.

Tape path Adjustment for "Guide Rail Base 2 with TG8 Gate Adjustment"

You do not have to adjust theTG-8 gate adjustment screw.

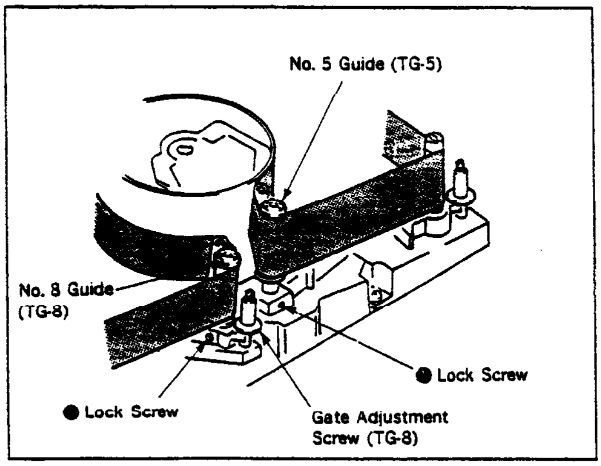


Fig. 52

4-3 NO. 4 GUIDE (TG-4) ADJUSTMENT

When an entire guide base is replaced, its height has been preste.

TG-4 Guide Height Presetting

1) With the top surface of the TG-4 guide leveled, rotate an upper flange by one turn. This is a preset height.

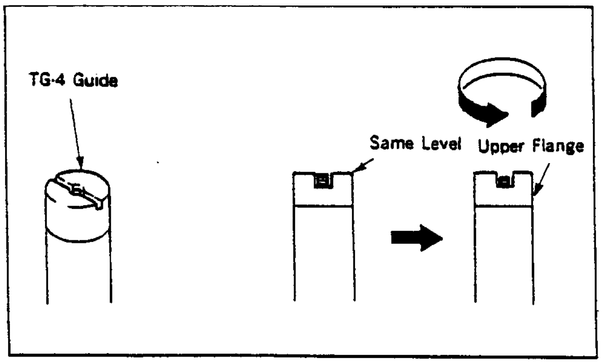


Fig. 53

No. 4 Guide (TG-4) Adjustment

1) Play back the tracking alignment tape.
2) In the FWD mode, check that the tape runs along a TG-4 lower flange. When there is a clearance, turn TG-4 counter-clockwise to put the tape along the TG-4 lower flange. turning angle must be within 180°.
When this is done, check that a tracking waveform (Fig. 54) is not changed.
When a tracking waveform inlet is downward as shown in Fig. 55, make tracking adjustment at the inlet side by raising a height of TG-4.

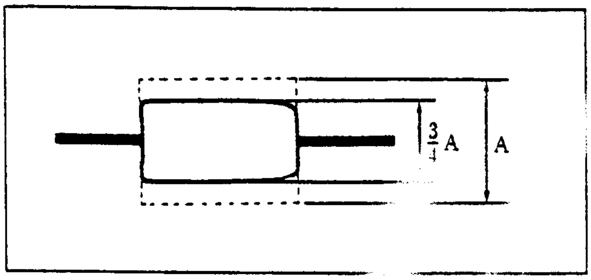


Fig. 54

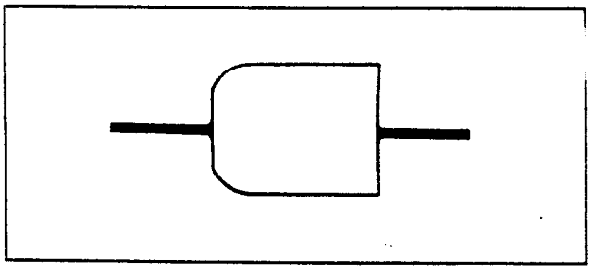


Fig. 55

Tape Path Adjustment for "Guide Rai[illegible] 1 with TG4 Gate Adjustment" (Fig. 56)

After adjusting an inlet, when the TG-4 lo[illegible]ge is curled in the REV mode, turn the TG-4 gate a[illegible]g screw at pitches of 45° to the left to remove a curl. ([illegible]ck screw is attached to the TG-4 gate adjusting screw. Fir[illegible] loosen the lock screw a little, and then, turn the gate adjusting screw. After adjustment, tighten the lock screw.)

If the TG-4 gate adjusting screw is turned to the left too much, the TG-2 upper flange (arrow-indicated part in the figure above) is greatly curled. If it happens, turn the screw to the right.

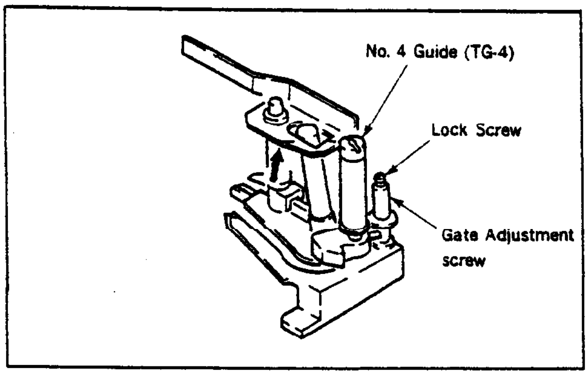


Fig. 56

4-4 NO. 11 GUIDE (TG-11) ADJUSTMENT

1) In the PLAY BACK mode, check that it has no deflection between the capstan and No. 11 guide (TG-11).
   (Criterion: 0.5mm or less)
   when the tape is deflected, turn the No. 11 guide (TG-11) to remove its deflection. (Fig. 57)
2) Select the REV mode and check the RF waveform at the outlet side. (Fig. 58)
3) If the waveform is defective, turn the TG-11 nut counterclockwise by 90° and recheck 2), 3) and 4).
4) Apply screw lock to the No. 11 guide (TG-11).

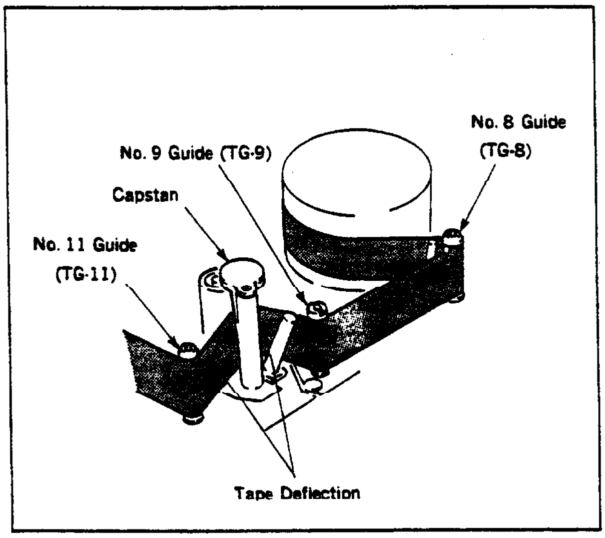

No. 8 Guide
(TG-8)
No. 9 Guide (TG-9)
Capstan
No. 11 Guide
(TG-11)
Tape Deflection

Fig. 57

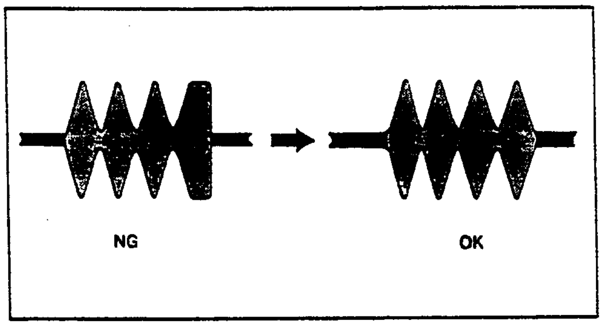


Fig. 58

4-5 CHECK AFTER ADJUSTMENT

1. Tracking Check

1) Play back the tracking alignment tape. In the PATH mode, shift a track. (Fig. 59)
2) At this time, check that a minimum amplitude value (E_{MIN}) is 67% or more of a maximum amplitude value (E_{MAX}). (Fig. 60)
3) Make sure that the waveform does not fluctuate greatly. (Fig. 61)

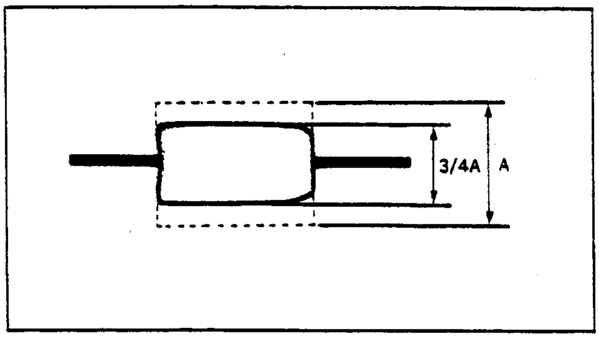


Fig. 59

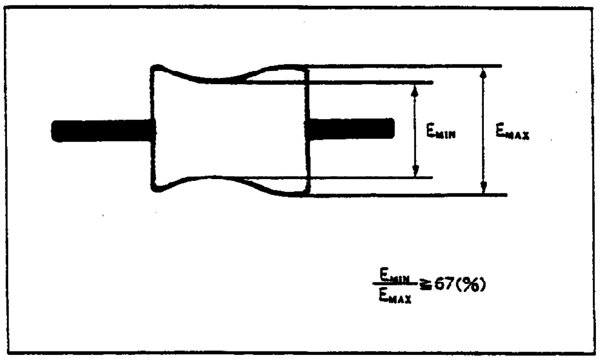


Fig. 60

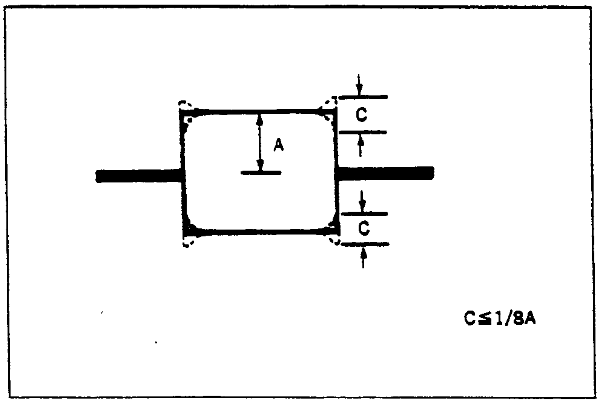


Fig. 61

2. CUE, REV Check

1) Play back the tracking alignment tape and select the | REV | mode. At this time, waveform peak pitches must be unform. (Fig. 62 ⓐ) When they not uniform, make tracking adjustment in 4-2 and No. 11 guide (TG-11) adjustment in 4-4.
2) Select the | CUE | mode. At this time waveform peak pitches must be uniform. (Fig. 62 ⓑ) When not uniform, make tracking adjustment in 4-2.

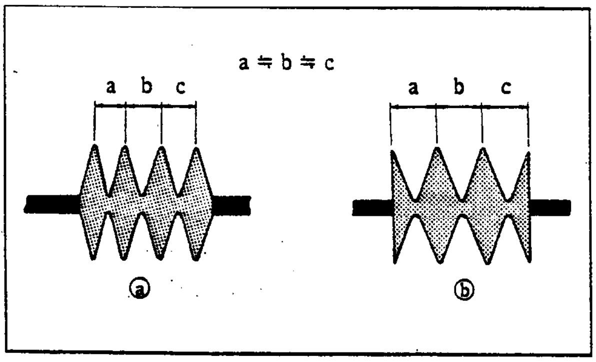


Fig. 62

3. Rise Check

1) Play back the tracking alignment tape.
2) In the PLAY BACK mode, check that the RF waveform rises horizontally within one second. At this time, check also that the tape is not deflected around the pinch roller. (Fig. 63)
3) Play back the tape after CUE/REV and FF/REW operation and check that the RF waveform rises horizontally within one second. At thistime, check also that the tape is not deflected around the pinch roller.
4) Repeat the checks in 2) and 3).

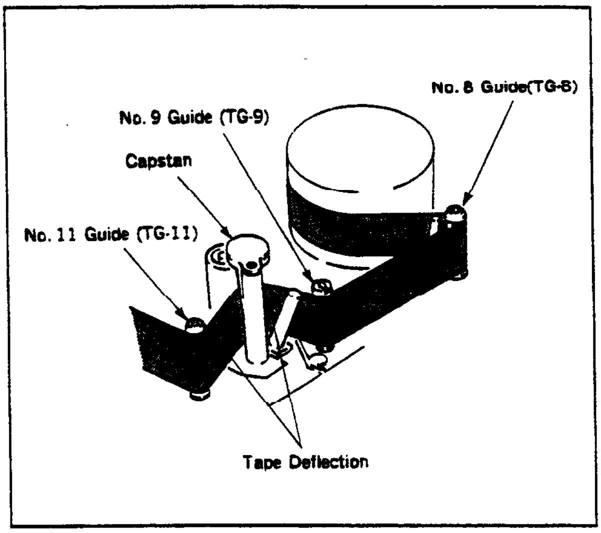

No. 8 Guide(TG-8)
No. 9 Guide (TG-9)
Capstan
No. 11 Guide (TG-11)
Tape Deflection

Fig. 63

4. Tape Running Check

In the CUE and REV modes, check that the TG-2 upper and lower flanges, TG-4 lower flange, TG-5 upper flange, TG-8 upper flange and TG-11 upper and lower flanges are not culed greatly. (Fig. 63)

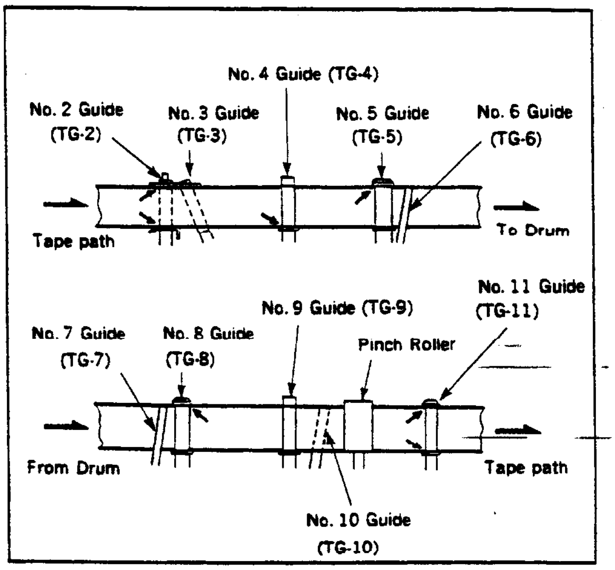

No. 4 Guide (TG-4)
No. 2 Guide (TG-2)
No. 3 Guide (TG-3)
No. 5 Guide (TG-5)
No. 6 Guide (TG-6)
Tape path
To Drum
No. 11 Guide (TG-11)
No. 9 Guide (TG-9)
No. 7 Guide (TG-7)
No. 8 Guide (TG-8)
Pinch Roller
From Drum
Tape path
No. 10 Guide (TG-10)

Fig. 64